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COMPUTERWORLD

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Compaq to lead 'lite' brigade

BY RICHARD PASTORE
CW STAFF

NEW YORK — When Compaq Computer Corp. unveils its next-generation LTE notebook-size computer today, it will open the floodgates for a deluge of me-too competitors and price wars, observers said. The LTE 386S/20 will set a de facto standard and may prove a tough act for even Compaq to follow, some analysts noted.

An Intel Corp. 80386SX-based, IBM Video Graphics Array-compatible machine has long been anticipated as the next evolutionary step for notebook-class personal computers. Optimized to run more sophisticated software, such as Microsoft Corp.'a Windows 3.0, the Compaq aystem matches the minimum desktop specifications being set at most medium-size and large businesses.

The LTE 386S, scheduled to ship this month, promises to improve on the weaknesses of its predecessors. Instead of a stunted screen, Compaq has incorporated a full-size, 9-in. diagonal display that is "edgelit" rather than backlit. Full-fingered users may be happy to find that the unit's keys are not cramped, but rather standard-spaced. Compaq has also added 4K bytes of disk cache and the options of an internal modem and compact disc/read-only memory adapter, among others.

Perhaps more importantly, all LTE model cases will now be made of a more durable plastic, a Compaq spokesman said. Cracks in LTE and LTE 286 cases have resulted in a 30% to 40% rejection rate in some areas, according to Peter O'Connor, president of Laptop Expositions in New York. Owners of older LTE models will receive a lifetime case warranty for free replacement.

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Upscale laptop
Compaq's latest laptop PC will feature more memory, advanced graphics and a more powerful CPU than the LTE 286

	LTE 386S/20	LTE 286
Processor	20-MHz Intel 80386SX	12-MHz 80286
Memory	2M to 10M bytes	640K to 2.6M bytes
Hard disk	30M or 60M bytes	20M or 40M bytes
Display	VGA, 16 gray shades	CGA, 4 gray shades
Weight	7.5 pounds	6.7 pounds
Base price	$6,499	$3,499

Source: Compaq Computer Corp. CW Chart: Marie Hastes

Apple paring Mac costs

Move seen as key to regaining lost market share

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Beginning today, millions of people can potentially do something with an Apple Computer, Inc. Macintosh that they were unable or unwilling to do before — own one.

Apple begins its long-awaited move to become a supplier of inexpensive personal computers today with the unveiling of three Macintosh PCs designed to regain the low-end market share that has been slowly eaten away by inexpensive IBM Personal Computer-compatible clones.

While the trio is expected to reinforce Apple's strong presence in the home and education markets, analysts said it may also accelerate Apple's expansion into the corporate world — the traditional domain of DOS-based clones.

"When it came to price, Apple always entered the world of big business with one strike against them," said Benny Lorenzo, an analyst at San Francisco-based research firm Volpe, Covington and Welty.

Apple customers said they are hungry for the new machines. "This is long overdue; we're anxious for them," said Rick Christjansen, manager of automation support at the Manville Technical Center in Denver. Christjansen said he is particularly eager to purchase the Macintosh SI because its internal Nubus expansion slot will facilitate network hookup.

Leading the rollouts at the firm's Fremont, Calif., manufacturing facility will be the

Continued on page 6

Software clan to patrol hype

BY NELL MARGOLIS
CW STAFF

BOSTON — Executives from more than a dozen software companies convened last week to declare open season on dubious marketing and accounting practices that they see as threatening their industry's credibility — and credit.

The fledgling Software Business Practices Council said it wants to stop sky-high marketing bype, vaporware announcements, misleading advertising and "creative accounting" by software vendors.

While the group includes such notable members as Ashton-Tate Corp., Digital Equipment Corp. and Lotus Development Corp., the software industry's biggest players have so far failed to join, and observers said they doubt the council can make much of an impact without them.

The council'a two-pronged plan is to get the word out that "straight-shooting software vendor" is not an oxymoron and

Continued on page 8

Quake threat still haunts data sites

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — One year ago this week, the San Francisco region reeled in the wake of a major earthquake that measured 7.1 on the Richter scale. It took many information systems shops days to recover from the Oct. 17, 1989, quake, and for a few sites, the path back to normalcy took months. The passage of a year has softened the memory of those painful 30 seconds when 62 people lost their lives amid the rubble of buildings and highways, but it does not appear to have caused computer operations to pack up and leave.

With a commitment born of San Francisco'a history of rising above natural catastrophe — including the April 1906 earthquake and fire — area firms are still reviewing backup procedures and signing up for hot-site recovery services.

But San Francisco IS managers admitted last week to a certain fatalism about future quakes. Shaklee Corp.'a data center moved across San Francisco Bay into an earthquake-resistant building in Hayward, Calif., a few months before the quake. "We haven't done much more since then to prepare for the next one," said Hugh Bradley, director of MIS at the San Francisco-based firm.

Some shops protect themselves by having dual data centers. "We're continuing to revise our plans," said John Parady, executive vice-president of technology services at the Pacific Stock Exchange, which has computerized trading floors in San Francisco and Los Angeles. "If we should ever lose the San Francisco data center, we could stay up and running in Los Angeles. But we've tightened up on a few things, like having redundant data in both centers." After the

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DICK REDDECLIFF
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The Fifth Wave

"WE HARDLY GET ANY COMPLAINTS FROM USERS ANYMORE. THINK ITS BECAUSE WE HIRED A TROGLODYTE TO RUN THE DEPARTMENT?"

EXECUTIVE BRIEFING

■ **The thrill is gone from trade shows.** A *Computerworld* survey of information systems managers reveals that they are cutting back on spending during a blah economy and that they have pared attendance at trade shows. Fifty-three percent of the managers surveyed say they are attending fewer shows than they were two years ago. While show organizers claim that attendance is up, IS folks say they are more interested in educational conferences. **Page 4.**

■ **Market research is nothing new,** and, as the Edsel showed the people at Ford three decades ago, market research is not perfect. What *is* relatively new, however, is the use of computer-based systems to uncover opportunities that are buried amid the massive amounts of facts and figures collected in conjunction with a new product launch. Some companies have success stories to relate. **Page 93.**

■ **Well-known and respected IS exec Gary J. Biddle** died recently of an apparent heart attack. Biddle, 52, had worked since his teens at American Standard, rising to the position of vice-president of IS technology. His peers call him a "lovely guy and real gentleman." **Page 4.**

■ **The aftershocks may be gone but the memories live on** one year after the Northern California earthquake of 1989. IS executives say they learned some lessons from the quake: not only how to tie down bouncing disk drives but also how to deal with the human element of a disaster. **Page 1.**

■ **There may be a multiplatform distributed database** in IBM users' future, but the wait just seems to grow. IBM executives indicated that current plans call for a late 1991 announcement of a shipment date. **Page 29.**

■ **IS professionals aren't counting on banking careers** these days. With layoffs and cutbacks smacking the nation's largest banks, executives are forced to rethink their strategies. The fortunate ones are those with highly specialized skills; the less fortunate ones are those with "plain vanilla" mainframe backgrounds. **Page 120.**

■ **The old days of easy cabling decisions** are gone. Standards once dictated what you used: coaxial for Ethernet and shielded twisted-pair for token-ring. Today, managers are dealing with multiple choices involving numerous types of cables. The upside is that decision-makers have more flexibility. The downside is that decision-makers must make more decisions. **Page 73.**

■ **Police thyself** is what the software industry may be telling its members. Representatives of a dozen software vendors last week acknowledged that the industry has had its problems with things such as vaporware, marketing hype and creative accounting practices. The vendors plan to set up ethical guidelines for the industry to follow. **Page 1.**

■ **Politics is a fact of life** in organizations. An IS manager offers some tips based on his experiences on how you can learn to play the game. **Page 135.**

■ **On-site this week:** It may have been good as far as paper-based systems go, but it was still paper. A major plumbing supplies distributor, Ferguson Enterprises, is working on the replacement of its longtime manual system with a Pick-based computer system. **Page 33.** Expert systems that draw data down from IBM AS/400s to PCs are a key ingredient for Mrs. Fields Cookies. **Page 45.** "Why wait?" seems to be the theme at Stanford University, where management decided not to let vendors choose which protocols should be used for high-speed networking. The university is evaluating Switched Multimegabit Data Service as a means to provide 45M bit/sec. communications among researchers, academicians and scientists. **Page 78.**

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Gary Biddle was outsourcing pioneer

BY CLINTON WILDER
CW STAFF

American Standard, Inc.'s Gary J. Biddle, an information systems executive with a reputation for translating innovative thinking into action, died suddenly late last month at the age of 52.

Biddle, vice-president of IS technology at American Standard, died of an apparent heart attack in his sleep Sept. 26 during a business trip to the UK. Widely regarded as a pioneer of the current outsourcing trend, Biddle was in high demand as a conference speaker and spent a lot of time sharing his ideas.

"He was a lovely guy and a real gentleman, and I'm really very personally shocked and saddened by his loss," said Raymond Perry, corporate vice-president of IS at Avon Products, Inc. in Rye, N.Y. Avon chose to eschew the outsourcing route that American Standard embraced, but Perry credited Biddle with sparking the idea for data center consolidation that saves Avon $3 million per year.

"I had lunch with Gary last year to discuss that, and I now call it the $3 million lunch," Perry said. "I give him an awful lot of credit for getting our whole train of thought going. I'm sure American Standard is grateful to him for what he did there, but Avon owes him a debt of gratitude, too."

Joseph Bergen

Biddle practiced *what he preached*

Biddle was a lifelong American Standard employee, first employed there at age 18. He moved to data processing in 1973 and rose steadily through the ranks.

Biddle's career at the New York-based plumbing and transportation products firm was jeopardized by the hostile takeover bid of Black & Decker, Inc. in 1988. However, American Standard successfully fended off the bid with a leveraged management buyout, and Biddle stayed on as a major shareholder and executive.

The buyout debt forced him to look at technology costs differently, and he chose to outsource IS operations to Genix Corp. in 1988, well before outsourcing became a household name in IS. In a *Computerworld* profile early last year, Biddle predicted that outsourcing would become a major trend [CW, April 17, 1989].

Biddle "shocked IS managers into rethinking not only their mission but also their value-enhancing capacities to their enterprise," said Henry Pfendt, direrctor of information technology services at Eastman Kodak Co.

"Above all, he practiced what he preached," Pfendt added. "That will be his lasting legacy."

Pfendt's sentiments were echoed by Anthony DiRomualdo, an associate director at The Diebold Group, Inc. who worked closely with Biddle. The consulting firm adopted many of Biddle's ideas about measuring return on IS investment.

"A lot of people talk about those concepts, but successfully implementing them is another matter," DiRomualdo said. "American Standard was the only firm I knew that really did. Gary was a model in my mind of what an IS executive should be."

"The community of IS has lost a great spokesman," said John Imlay, chairman of Dun & Bradstreet Software and a vendor to American Standard. "I was just forming my customer council, and he was the first name on it. I'm in shock. All of us will miss him, particularly me."

Trade shows losing appeal for cost-conscious IS execs

BY JOANIE M. WEXLER
CW STAFF

Computer trade shows appear to be fizzling — not sizzling — for the information systems manager, according to *Computerworld* readers, who say that today's dismal economic climate is forcing them to maintain a judicious grip on their corporate wallets.

Over 150 IS professionals recently surveyed by *Computerworld* reported that their exhibition-floor activity is waning, despite sponsor claims that attendance numbers are on an upward spiral.

According to the survey respondents, 53% are attending fewer shows than they were two years ago, and all respondents interviewed in a telephone follow-up acknowledged that they have no formal budget for show attendance.

"These are not boom economic times," said Roxolana Poluchowicz, manager of computing facilities at Stone Container Corp. in Chicago. "There is a value to shows in that it is convenient to be exposed to new products and technology all in one spot. But is that something we can live without by getting the same information less expensively? Yes."

David Long, director of IS at Hotsy Corp., a cleaning-machine manufacturer in Denver, added, "You can't get into a lot of detail at a show, so you're going to have to do more research anyway."

Consistent with their recent trade show behavior, 52% of the respondents also reported that their plans for the coming year call for decreased trade show attendance — both for themselves and their staffs.

IS professionals, however, seem to be holding in higher esteem the educational conferences often offered in conjunction with trade shows. Thirty-four percent of the survey respondents said they will attend more conferences and fewer trade shows, compared with 1.5% who said they will attend more trade shows and fewer conferences.

One network computing event, Interop '90, held last week in San Jose, Calif., did report a larger number of IS managers in its attendance profile. Niche shows, such as PC Expo and Networld '90, however, survive "because they're geared to specialists," according to Ralph Ianuzzi, president of Bruno Blenheim, Inc., which sponsors both PC Expo and Networld.

Interop President Dan Lynch said that he still sees a majority of engineers in attendance. "But these specialists are starting to have their managers in tow. They're guiding them to the booths and saying, 'See, it works — now will you sign the purchase order?' " Lynch commented.

The top ranked event in terms of usefulness was trade-show giant Comdex/Fall '90, with an anticipated 120,000 attendees at its upcoming event in November, compared with its 118,000 head count in 1989. Comdex was cited by 23% of survey respondents as relevant to their jobs; PC Expo (14%) and Decworld (10%) were runners-up, followed by Info, Networld and local trade shows (4% each).

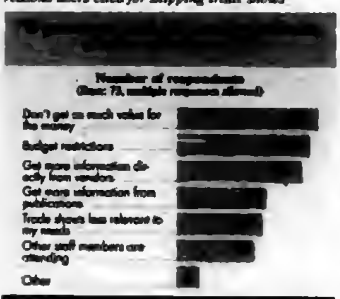
However, 18% of the respondents specifically replied "none" or "haven't attended any" to the usefulness question.

"I'm looking for applicability to my business environment," said Ron Landry, director of MIS at Freeport McMoran, Inc. in New Orleans. "Just to show a product that works has no meaning unless I can interpret how it can be applied to us."

One IS manager at a large law firm, who asked not to be identified, attributed the discrepancy between the survey and show sponsor numbers to increased attendance by end users. "As general-purpose users become increasingly aware of technology, they're going to demand more," he said, "and this will become a disjointed approach to corporate strategy."

Money, money

Cash problems and lack of show value are the top reasons users cited for skipping trade shows



Source: Computerworld CW Chart: Paul Mock

CORRECTION

Microsoft Corp.'s Windows 3.0 Supplemental Driver Library (SDL) may be downloaded at no charge from on-line services such as Microsoft Online, Compuserve and Genie. There is a $20 fee, however, if the SDL is obtained on disk from Microsoft.

A product listing in the PCs & Workstations section of *Computerworld* [Sept. 17] said that Inner Media, Inc.'s Wideangle Desktop Expansion program was "designed to expand OS/2 Presentation Manager applications further than the confines of a single personal computer screen." The product actually expands a user's OS/2 Presentation Manager desktop rather than OS/2 Presentation Manager applications themselves.

In the *Computerworld Premier 100* supplement, 3M Co.'s revenue was incorrectly reported. The company's sales were approximately $12 billion for 1989, and profits were $1.3 billion. In addition, Leon Selfe's position was incorrectly listed in the main chart; he is manager of data processing at Pittston Coal Group, Inc., a subsidiary of The Pittston Co.

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1988. Microcomputers revolutionize business. Largely because the average cost per MIP dropped to under $1,300.

PC aids Nynex whistle-blower

BY PATRICIA KEEFE
CW STAFF

WASHINGTON, D.C. — Much as David took on Goliath, attorney Scott Rafferty is knocking the stuffing out of telecommunications giant and former employer Nynex Corp. armed with little more than a PC and a handful of utilities.

Rafferty's efforts, coupled with testimony from other whistle-blowers, have cost Nynex millions of dollars, said Keith Gordon, assistant attorney general for New York State.

"Time after time, I've out-technologied Nynex, the supposedly high-tech company," Rafferty said gleefully last week. "It's been very effective," agreed Gordon, adding that computer technology "made us far more capable of litigating our case effectively."

One reason technology has proven to be such an "equalizer" is Rafferty's estimate that most law firms are 10 years behind the computer wave.

Despite the fact that Nynex has spent $7 million fighting two suits involving Rafferty or his testimony, "they keep getting tripped up because of little things like Symphony 1.1," Rafferty said.

For example, two years ago, Nynex's high-powered legal team, army of paralegals and eight huge boxes of court documents were no match for his Toshiba Corp. 1000 laptop and Lotus Development Corp.'s Symphony. In August, at a hearing on the New York Telephone Co. rate case, Rafferty claimed he was able to keep Nynex witnesses on the straight and narrow by coupling Lotus' Magellan with a lone IBM Portable 386 whose 60M-byte hard disk was crammed with thousands of pages of deposition testimony.

Magellan 2.0 enabled the team to index various items and highlight key pages of testimony. The ability to intimidate witnesses by instantly calling up past testimony also saved a lot of time, Gordon said.

Perhaps Rafferty's most innovative application involved Peter Norton Computing, Inc.'s Norton Utilities, which was used to examine electronic mail records. Under court order, Nynex had included as part of 30,000 pages of hard-copy documentation a 500-page index to 50,000 electronic messages. Rafferty discovered that he had copies of only some of the messages.

Nynex uses Digital Equipment Corp.'a VAX-based E-mail system, which backs up new messages by overwriting old ones. Norton Utilities enabled Rafferty to retrieve pieces of older, underlying messages bit by bit. "He was able to obtain extremely damaging records that have played an enormous part in his private case against Nynex," Gordon said.

So critical was this evidence that Nynex charged Rafferty with theft and got a magistrate to enjoin him from even talking about the information he had unearthed. A U.S. Court of Appeals reversed that order, citing First Amendment rights.

Once upon a time, Rafferty was on Nynex's side. For seven months in 1986, he was vice-president of the Telecommunications Consulting Division at Nynex subsidiary Telco Research Corp. He was fired in November 1986 after asking Nynex officials whether plans for the consulting division overstepped a government waiver allowing it to sell and service software, Gordon confirmed.

The regional holding company, which owns New York Telephone and New England Telephone Co., among other ventures, has good reason to rue the day it fired Rafferty.

Working with the New York Attorney General's office, several federal agencies and a loose coalition of other Nynex whistle-blowers, Rafferty has figured prominently in a raft of administrative and civil proceedings filed against Nynex this year.

Symphonic suit

Whistle-blower Scott Rafferty's testimony has had a major impact on New York State's rate case against Nynex, according to Keith Gordon, an assistant attorney general for New York State.

One of the issues in the rate case concerned a group of suppliers involved in "highly irregular social activities" — that is, providing some Nynex executives with prostitutes and liquor.

Nynex's "so-called" investigation did an analysis of the amount of business these suppliers had with Nynex, beginning with the year before Nynex executives attended the parties, Gordon said.

This analysis produced about 40 pages of data, each page describing the volume of business for each of the suppliers during the period of a year. "Nowhere were there side-by-side comparisons of all the suppliers," Gordon said.

After receiving the document, Rafferty put Lotus' Symphony 1.1 to work. He put all the suppliers, their volume of business and the number of years involved into one spreadsheet. He then calculated a rated average of their growth and was able to demonstrate that those suppliers involved in the illicit parties experienced on average a 67% growth rate, compared with a 4% rate for suppliers who did not participate. "It literally proved to be a bombshell," Gordon claimed.

This evidence was not only put to use in state proceedings that are still ongoing, but it also helped to convince the New York State Public Utilities Commission to order a further investigation into the level of business done by these suppliers.

PATRICIA KEEFE

Apple

FROM PAGE 1

Macintosh Classic, a Motorola, Inc. 68000-based machine that resembles the Macintosh Plus and SE it replaces, which are being removed from Apple's price lists.

The 8-MHz Classic, which will run about 25% faster than the Plus, is structurally similar to the SE, but Apple hopes to snare new clients with the dramatic price differential. A Classic with one floppy drive will sell for $999 — compared with $1,799 for a similarly configured Plus — and $1,499 with a 40M-byte hard disk, compared with $3,498 for a similar SE setup.

The Macintosh LC will become Apple's lowest priced color system. It will use a Motorola, Inc. 16-MHz 68020 chip, making it about twice as fast as the SE, and is shaped like a small pizza box. A model with 2M bytes of random-access memory and a 40M-byte hard disk will sell for $2,499. The LC will be available in limited quantities through the end of the year with full availability expected in January, Apple officials said.

Rounding out the introductions will be the Macintosh IISI, a 20-MHz Motorola, Inc. 68030-based machine that is approximately five times faster than the SE. The SI will also offer standard sound input and become the lowest priced Macintosh to let users work under A/UX, Apple's implementation of the Unix operating system. A version with 2M bytes of RAM and a 40M-byte hard disk will sell for $3,769, while a model with 5M bytes of RAM and 80M-byte drive will cost $4,569.

Apple will supplement the unveilings with the rollout of three monitors: a 12-in. monochrome monitor for $299, a 12-in. red-green-blue color monitor priced at $599 and a 13-in. high-resolution color monitor for $999.

Apple officials said they were able to keep the price of the new models down by redesigning system components ranging from the logic board to the plastic used in the computer casing, thus trimming manufacturing costs.

At a recent briefing, Chief Executive Officer John Sculley also said the machines' low cost resulted from Apple's new belief that its traditionally high profit margins may fall victim to the company's quest to recapture market share. Since 1987, Apple has seen its portion of the $67 billion PC market shrink from nearly 15% to just 10%, according to Dataquest, Inc., a San Jose, Calif.-based research firm.

Some analysts, however, said Apple has been too laggard in getting the products to market. "Apple is way behind the curve [with the new PCs], and that's going to hurt," said Jim Poyner, an analyst at William K. Woodruff & Co., a research firm in Dallas.

Apple officials said the delay was a result of the system revamp, which, unlike earlier Macintosh releases, was not a simple reworking of previous specifications.

Mac attack

Apple is moving to shore up market share with systems priced more competitively with PC-compatibles

NEW

Apple machines

Macintosh Classic
- 1M byte RAM/floppy $999
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- 12" RGB color monitor $599
- 16-MHz 68020
- Limited quantity available until end of year. Full availability in January

Macintosh IISI
- 2M byte RAM/40M-byte hard drive ... $3,769
- 5M byte RAM/80M-byte hard drive ... $4,569
- 13" RGB color monitor $999
- Keyboard $129
- 20-MHz 68030
- Sound input standard
- Available Oct. 15

Source: Apple Computer, Inc. CW Chart: Paul Mock

RISC-based Macs said to be on Apple's drawing board

BY JAMES DALY
and MAURA J. HARRINGTON
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. is reportedly working to integrate Motorola, Inc.'s reduced instruction set computing (RISC) microprocessor technology into its popular Macintosh personal computer line by as early as next year.

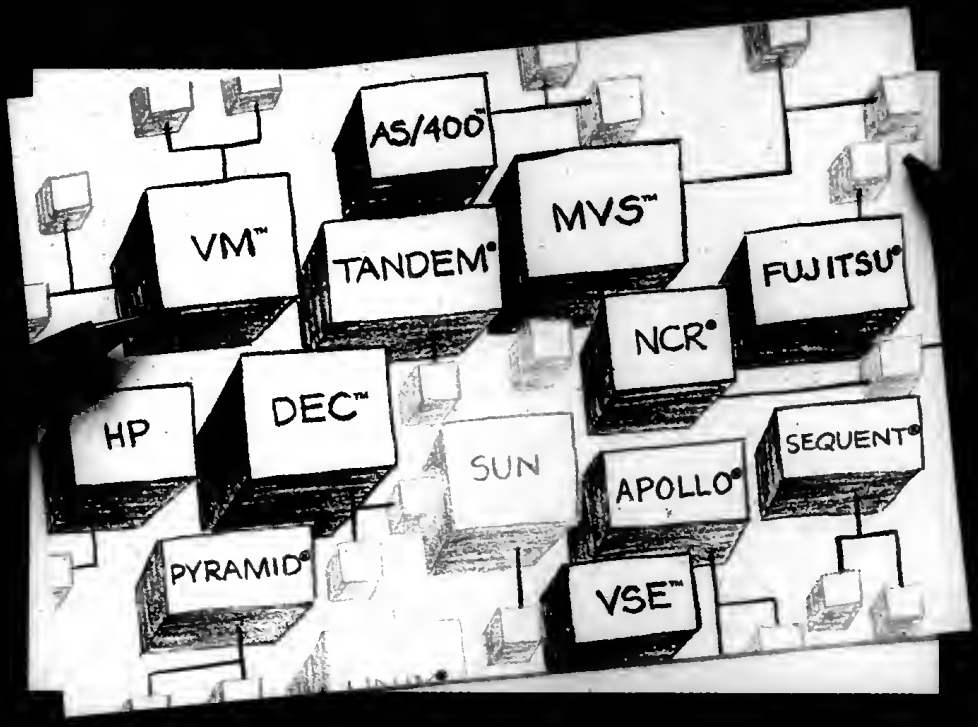
Apple insiders said they are exploring designs that would produce a Macintosh powered by a RISC chip, which is streamlined to operate significantly faster than standard chips and is commonly used in workstations. "There are a lot of intriguing possibilities there," said one Apple employee.

The move could be advantageous to both firms. Motorola, which is primarily known for its 68000 line of processors that forms the computational engines of the Macintosh series, has so far stalled in drumming up widespread interest in its current RISC offering, the 88000. Apple, meanwhile, is feeling the heat from workstation makers such as Sun Microsystems, Inc., Hewlett-Packard Co. and Digital Equipment Corp., which already use RISC technology and have targeted the price of their machines at the heart of the Macintosh line.

At last week's Microprocessor Forum technical conference in Burlingame, Calif., Motorola described plans to introduce a second-generation RISC chip, due out next year. Dubbed the 88110, the microprocessor is expected to contain over 1.4 million transistors and combine the CPU, cache memory and memory management sections on a single chip.

Motorola system architect Keith Diefendorff said the chip will be capable of running between three and five times faster than its current RISC chips, or between 50 million instructions per second (MIPS) and 85 MIPS.

The only hitch to the introduction of RISC technology into the Macintosh line is that it would require some software development finesse to get applications that work on the older machines to work on the new ones. Because a RISC machine would not be binary-compatible with the remainder of Apple's complex instruction set computing-based Macintosh line, a software emulator would need to be included with the new machine in order to run older applications.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NEWS SHORTS

Tandem in hiring freeze

Tandem Computers, Inc. conceded last week that it has had a hiring freeze in place since Sept. 10, although management had announced the freeze only to Tandem employees. In commenting on its fourth quarter, ended Sept. 30, the firm said it still anticipates a quarter of record revenue, if not stellar earnings. "We've been controlling capital expenditures and discretionary spending since last year" while also restricting employee travel and limiting equipment purchases, a Tandem spokeswoman said. "Now, [Chief Executive Officer] Jimmy [Treybig] is saying that we'll extend those controls into 1991, for as long as it makes good business sense to do so."

HP late with multiprocessor

Hewlett-Packard Co. said last week that its dual-processor Unix-based computer, rated at about 95 million instructions per second, has been delayed for up to six months. Originally scheduled for release in December 1990, the system was not delayed because of problems with adjusting the operating system to multiprocessing — identified as an inherent problem with Unix. Instead, a spokesman for HP said that there were just not enough engineers to get the product out on time.

Navy maneuver risky, GAO says

The U.S. General Accounting Office (GAO) said the U.S. Navy is buying computer gear for use in submarine-patrol aircraft before testing is completed, coding software before the design is approved and using a model of one of the system's processors for testing that is not a valid representation of the real processor. The Navy is following that risky approach, the GAO said, because it believes that further delays in the project will cause it to miss fixed-price contract deadlines, boosting costs.

Egghead settles stockholder suit

Egghead Discount Software has agreed to an out-of-court settlement of $2.9 million in a shareholder lawsuit. The class-action suit, filed in July 1989, alleged that Egghead misstated its initial public offering and subsequent public filings. A separate Securities and Exchange Commission probe has also been launched. Egghead did not acknowledge any wrongdoing.

Volkswagen signs network contract

Scientific-Atlanta, Inc. and Volkswagen of America, Inc. subsidiary V-Crest Systems, Inc. announced last week their strategic alliance to provide satellite links between auto dealers and their manufacturers. V-Crest develops and markets computer-based dealership management services. The two firms also signed a $12 million contract for Scientific-Atlanta to provide a very small-aperture terminal network linking Volkswagen and Audi dealers to their headquarters or data center.

MCDA consortium finalized

As expected, IBM and 13 other firms formed the Micro Channel Developers Association last week. The MCDA was formed to help the more than 800 developers of Micro Channel Architecture products get to market faster, with less chance that they will fail to meet MCDA specifications. The 13 other companies, all members of the MCDA's executive committee along with IBM, include AOX, Inc., Apricot Computers Ltd., Chips & Technologies, Inc., Cumulus Corp., Core International, Intel Corp., the National Software Testing Laboratories, NCR Corp., NEC Technologies, Inc., Ing. C. Olivetti & Co. S.p.A., Reply Corp., Siemens Nixdorf AG, and Western Digital Corp.

Northern Telecom claims win

Northern Telecom, Inc. announced a five-year agreement to provide up to $50 million worth of CCITT X.25 packet switches to SITA, the global telecommunications carrier for the air transport industry. More than 300 Northern DPN-100 switching nodes will form a backbone for the Mega Transport Network, which will serve SITA's 400-plus member companies.

More shorts on page 140

Prime faces hefty antitrust fine

BY SALLY CUSACK
CW STAFF

DETROIT — A federal jury in Detroit last week awarded an independent computer maintenance company a potential $25.3 million in an antitrust verdict against Natick, Mass.-based Prime Computer, Inc.

Virtual Maintenance, Inc. in Michigan alleged that Prime had unfairly excluded it from doing business with Prime customers via a "tying arrangement" whereby Prime mandates higher PDGS computer-aided design and manufacturing (CAD/CAM) software upgrade license fees for any customer who does not also purchase Prime's hardware maintenance service on the proprietary line of Prime 50 series minicomputers.

Virtual filed charges in 1989, stemming from the company's inability to penetrate the maintenance market for Prime computers running PDGS in three states — Ohio, Michigan and Indiana.

The case is similar to one that Hewlett-Packard Co. lost to Hypoint Technology, Inc. earlier this year in Cleveland. There are reported to be six other such cases pending against computer vendors in U.S. federal courts.

According to Joe Gavaghan, a spokesman for Prime, the computer manufacturer views its 50 series hardware and software as a complete, proprietary package that should be maintained as such to ensure proper support and maximum performance for the user.

Unfair practices

The jury found that Prime's practice unfairly excluded independent firms and subsequently awarded $8.4 million to Virtual — an amount that can be tripled under antitrust law.

"We feel confident we will get this decision reversed on appeal," Gavaghan said. "The policies in question are legal and have been in effect since Prime was founded in 1972."

Prime receives approximately one-third of its total revenue from computer services. Ronald S. Katz, a San Francisco lawyer and one of the attorneys representing Virtual, stated that this verdict, coupled with the recent HP litigation, "... sends a message to computer manufacturers that juries strongly disapprove of the methods that they have been using to foreclose competition."

Katz also serves as general counsel for the National Computer Service Network, the largest organization of independent computer maintenance companies in this country.

Virtual is in the business of maintaining computer hardware. In the three states where it operates, it has reportedly garnered more than 50% of the market for the maintenance of MAI/Basic Four, Inc. computers and Lundy terminals.

Software

FROM PAGE 1

to make good that word by pledging to uphold ethical guidelines with regard to marketing and accounting.

"Customers are angry, and, perhaps worse, they're confused," said Cognos, Inc. President Jeffrey Papows, who spearheaded the group. "When nobody can trust anybody, everybody suffers."

"The problem they're taking on is a pervasive one," said Kevin Carmody, IS director at The MacNeal-Schwendler Corp. in Los Angeles — itself a software company. "Frustration begins to grow when you've heard so many pie-in-the-sky promises that bear no relation to what the company's really doing that you begin to get the distinct feeling that marketing guys and R&D guys don't talk to each other."

Founding members, which include Hewlett-Packard Co., Sybase, Inc., Ross Systems, Ingres Corp., Banyan Systems, Inc., Interleaf, Inc. and Price Waterhouse, among others, conceded that the absence of any method of policing firms' compliance with the guidelines is a possible weak flank in their agenda. Nevertheless, they noted, the group is not entirely toothless: Several members said that they would, however reluctantly, expose to the press a member who violates the group's principles.

Industry analysts and software users applauded the council's efforts to instigate debate and to clean their own house. But they also raised questions about its chances for success.

A major issue is the absence of such big vendors as IBM, Computer Associates International, Inc., Microsoft Corp. and Oracle Systems Corp. from the membership roster. Papows said he has talked with representatives from all of those companies and only Oracle has declined to join. CA aided in forming the council but backed off when IBM put a decisioo on hold.

A voluntary self-policing effort only works wheo all of the potential violators take the pledge, said Robert Therrien, an analyst at Paine Webber, Inc. "There's always going to be some rogue who says 'to hell with the rules, we want to win,' " he said. "As soon as that happens, there go the rules."

> "THERE'S ALWAYS going to be some rogue who says 'to hell with the rules, we want to win.' As soon as that happens, there go the rules."
>
> ROBERT THERRIEN
> PAINE WEBBER

Bryan Shepherd, executive vice-president of marketing at CA, agreed. "What the council is seeking to do is to create an even playing field," he said. "Unfortunately, the world isn't even."

"What the council is doing is important," Therrien added. "But I doo't think it'a up to them alone. It's also up to the press to report responsibly and Wall Street to act sensibly and users to get smart."

Carmody also said he doubted that the frustration can be cured by well-intentioned vendors. "Marketing hype is the way of the world," he said. "Customers have to learn to ask the right questions."

While learning, he said, customers are likely to stick to the familiar. "If you've got six vendors and you suspect five of them might be lying to you — maybe all six — go with one that's been around for a long time and has at least a reasonable reputation for honest dealings," he said.

Shepherd said CA endorses the principles embodied in the council's white paper. "However, the fact that IBM isn't a member concerns us very much," he said. "How can we in full conscience pledge not to preannounce products when our biggest competitor has not done so?" When IBM announces a product or a capability, Shepherd said, "our customers don't ask us whether it's premature — they ask us, 'What are you going to do about it?' and we have to respond."

Both Shepherd and Dun & Bradstreet Software Chief Executive Officer John Imlay said they would take the council more seriously if it was folded into a larger, more established group, such as the software industry association, Adapso.

Papows said he ruled out working through Adapso initially because it would be too difficult to get the 750-member organization to act quickly on the ethics proposals. "We're intent on working with Adapso, but I want to have something to take to them," he said. "There's been a lot of action just in the last 72 hours."

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Federal quality prize awarded to IBM division

BY NELL MARGOLIS
CW STAFF

ARMONK, N.Y. — The world's premier computer company last week won the nation's premier quality award.

"Total quality management" exhibited by its Rochester, Minn., operations, home of the Application System/400, powered IBM into the winner's circle for the U.S. federal government's 1990 Malcolm Baldrige National Quality award — a gold medal that, since its establishment in 1987, has zoomed into public prominence as U.S. industry's rough equivalent to the Nobel Prize.

Sharing the honors with IBM this year were Federal Express Co., General Motors Corp. and Houston-based Wallace Co., a family-owned pipe and valve manufacturer that scored in the small business category.

While IBM is the only computer firm that will take home a trophy from next month's awards ceremony, Federal Express' appearance as the Baldrige award's first winner in the services category is also a victory for the information systems community. The Memphis-based delivery service's use of IS to garner some 40% of its worldwide market is approaching legend status [CW, July 2].

Established under federal statute in August 1987 and named for Secretary of Commerce Malcolm Baldrige, who was killed in a rodeo accident a month earlier, the Baldrige award seeks to promote quality awareness and achievement in U.S. companies, said John Makulowich, quality program public affairs official at the Washington, D.C.-based National Institute of Standards and Technology, which manages the award.

While approximately 90 companies completed applications in 1990 — more than twice the number of firms that competed in the award's maiden year — some 100,000 sent in for the application: a document containing qualification guidelines that add up to a virtual user's manual on how to inculcate quality.

IBM Rochester, in fact, used it that way in 1989. For the past two years, an IBM spokesman said, all aspects of work at Rochester have been guided and measured by the Baldrige qualifications, consciously chosen by the company as the ideal rules for its game plan.

The results, he said, include the AS/400's development cycle, which takes half the time of its predecessor's, and two years' worth of increasingly defect-free products and satisfied customers.

"As proud and happy as we are, we regard the Baldrige award as a promising signpost rather than an end in itself," said IBM Chairman John Akers in a prepared statement. "The work only begins here."

Akers saluted Rochester general manager Larry Osterwise and the approximately 8,000 Rochester employees for their award-winning effort.

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Benchmark execution speed	4 min. 11.4 sec. (4.3 times faster)	18 min. 17.2 sec.	18 min. 17.2 sec.
Benchmark executable file size	104,713 bytes (2.6 times smaller)	282,288 bytes	282,288 bytes
Benchmark source available for review	YES	NO	NO
DOS memory extender included	YES	NO	YES
No-charge run-time for DOS memory extender	YES	NO	NO
No-charge EBCDIC support under CICS and IMS	YES	NO	NO
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Dynamic Link Library support under DOS and OS/2	YES	NO	NO
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IBM announces disk array plan

BY ROSEMARY HAMILTON
CW STAFF

IBM edged toward the disk array arena last week by announcing a joint development deal with Maximum Strategies Corp.

The two companies plan to develop a disk array subsystem for engineering and scientific computing that uses a very high-speed interface standard called the High-Performance Parallel Interface, which clocks in at rates of up to 200M byte/sec.

However, IBM would not say when a real product may result from this effort.

"We don't know what will really happen," said Chris Wood, IBM manager of commercial analysis for the Storage Systems Product Division. "There may never be a product. It might flop."

Nonetheless, this first step shows that IBM has its eye on disk arrays and will likely go after this emerging business that so many other system and subsystem companies have targeted, analysts said.

Disk arrays and the redundant arrays of inexpensive disks (RAID) concept are the hot new topics in storage. Last month, EMC Corp. claimed to be the first to market when it introduced a subsystem that is an initial implementation of the RAID concept. Storage Technology Corp. has long been hinting that it will soon introduce an advanced RAID device, which is known in the industry by its code name, Iceberg. Meanwhile, most other systems vendors, including Amdahl Corp. and Hitachi Data Systems Corp., confirmed that they are researching this technology.

In simple terms, disk arrays or RAID devices could offer less costly fault-tolerant subsystems to replace traditional disk drives. The products would use strings of smaller disks and complex storage management techniques to provide performance of today's disk drives.

IBM has previously acknowledged research efforts and pointed out that it holds one of the first patents on disk array technology. The deal with Maximum Strategies, which is based in San Jose, Calif., is focused on a device that would be suited for numeric-intensive operations, Wood said.

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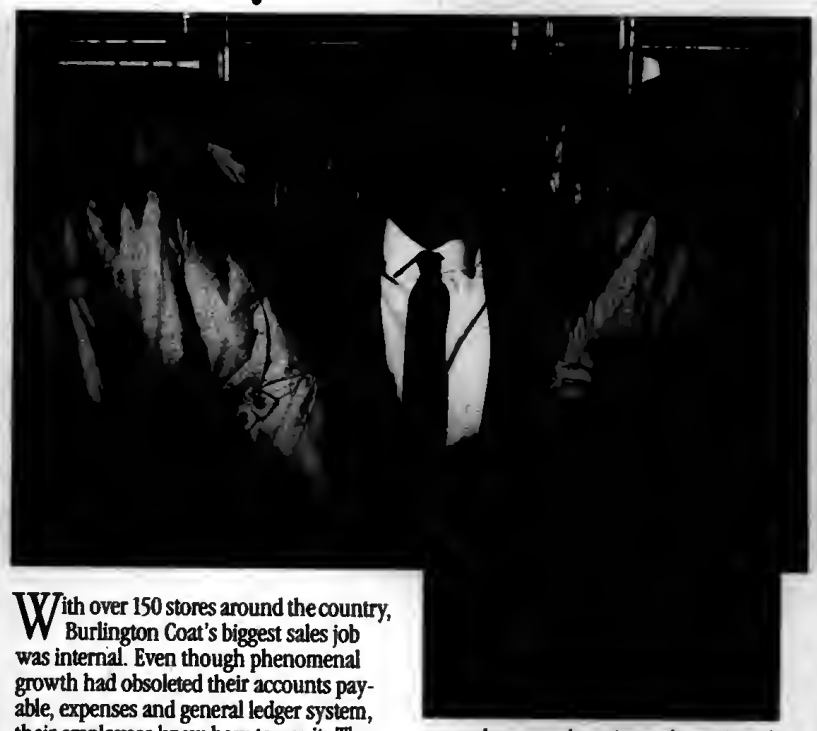

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Successful demo reassures users awaiting cheaper FDDI

BY JOANIE M. WEXLER
CW STAFF

SAN JOSE, Calif. — One year ago, the Interop show's Fiber Distributed Data Interface (FDDI) demonstration consisted of 12 vendors merely establishing connections among their equipment. Last week's edition showed 37 suppliers actually passing and managing data.

The progress is a reassuring sign for companies eyeing the high-speed fiber-based local-area network and hoping that the refrains of "we'll see the prices drop soon" come true.

Loral Aerospace, Inc. in Houston is currently running an FDDI backbone trial to interconnect LANs in six buildings. Bill Chalupnik, a senior research and development engineer, said seeing the Interop demo relieved his concerns, because his own FDDI interoperability testing — involving equipment from Cabletron Systems, Inc., Cisco Systems, Inc. and Proteon, Inc. — has not gone as smoothly.

"We've had a few problems, and it helps to see a successful demonstration," Chalupnik said. He added that his firm installed fiber cabling a year ago because it needed FDDI's 100M bit/sec. speeds, "but the cost and the development of the technology have slowed down our efforts."

The final component of the FDDI standard, Station Management, was approved by the American National Standards Institute (ANSI) in April, and many users and vendors were waiting for that before committing to products.

The average per-connection cost of FDDI today is generally considered to be about $11,000, although recent announcements from Digital Equipment Corp and Timeplex, Inc. have listed prices of about $8,000 per port for stations with a single attachment to a concentrator, which links to both of FDDI's dual, counter-rotating rings.

However, this is still a hefty investment for users accustomed to $200 Ethernet adapter card price tags. A report by Forrester Research, Inc. last spring predicted the per-connection price of FDDI will fall to $2,000 — but not until 1994.

Another Interop '90 attendee tapping his foot waiting for the hefty FDDI component costs to fall was Charles Benjamin, communications manager at the Northeast Regional Data Center of the University of Florida. Benjamin said he would like to move some of his Ethernets and token-rings, which serve as both backbones and LANs, to FDDI.

"The cost is holding us back," he said. "We'll go to an FDDI backbone first because bridging into individual buildings from a fiber backbone costs a lot less than a lot of direct attachments to individual FDDI LANs."

Pre-Interop rumors that several workstation vendors would be unveiling inexpensive direct-attach FDDI adapter cards were partially fulfilled — depending on a user's definition of "cheap." Silicon Graphics, Inc. introduced a dual-attachment card that interfaces the workstation directly to both rings without the need for a concentrator.

> "WE'VE HAD A few problems [with FDDI interoperability], and it helps to see a successful demonstration."
>
> BILL CHALUPNIK
> LORAL AEROSPACE

Silicon Graphics' $11,000 price tag is less expensive than the cost of Sun Microsystems, Inc.'s 1-year-old, $12,500 board or Hewlett-Packard Co.'s Apollo Division's $20,000 board, which is still in beta testing.

Dave Perro, a Silicon Graphics product manager, said that in two years, connection costs should drop significantly because of 600% reductions in the cost of a pair of fiber transceivers and plummeting FDDI chip set prices. He added that if the proposals for running 100M bit/sec. speeds over twisted-pair wiring — currently on the table for ANSI's FDDI committee meeting this week in Fort Lauderdale, Fla. — catch on, the cheaper twisted-pair alternative could provide the competition needed to spur FDDI vendors to lower their prices.

In the meantime, hub products introduced by Synernetics, Inc. ($19,900) and Fibronics International, Inc. ($30,000), which multiplex Ethernet LANs running in parallel at their full 10M bit/sec. speeds onto FDDI backbones, may tide users over until prices fall. The bridgelike products give existing Ethernet users access to FDDI with no change to the workstation for about $2,000 to $2,500 per port.

Michael Howard, president of Infonetics Research, Inc. in San Jose, agreed that the prices will drop "soon." He added that this year's Interop show should spur attendees to consider FDDI technology more seriously, because "this is the best test of FDDI applications to date."

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X/Open expands user input

BY JEAN S. BOZMAN
CW STAFF

SAN JOSE, Calif. — X/Open Consortium Ltd. has decided to bring end users a bit closer to the specifications process. Last week, X/Open announced a new "open" policy to go along with its "open systems" approach to the marketplace.

Working through user councils and product reviews, the policy will directly involve end users from the initial requirements stage up until the final specifications of an X/Open standard.

The move, announced at last week's Interop '90 show here, is the latest step in X/Open's call for user input. Two user conferences, one held in Montreal in 1989 and one last May in Luxembourg, provided some precedent for the increased user role. X/Open works toward interoperability and open systems standards, often involving Unix systems.

Doug Michels, executive vice-president at The Santa Cruz Operation (SCO), a vendor of Unix-based desktop software, said more user involvement should nudge the X/Open process along. "So far, X/Open's outreach to users has been a three-day, once-a-year event," Michels said last week. "It's the right kind of thing to do, but those user conferences haven't been as detailed as I would have liked them to be."

There has also been a two-year lag in the X/Open product cycle. X/Open's XPG 3 standard was announced in 1988 and given to vendors in 1989 but not shipped to end users until 1990.

"The way X/Open has worked [before] has been by developing specifications in closed working groups and then presenting them to the world," said Mike Lambert, vice-president and chief technical officer at X/Open. "We were building up [user] expectations before the platforms were even stabilized."

Vendor strength alone will not make the XPG 3 — or the forthcoming XPG 4, expected out in 1992 — catch on, industry analysts said. X/Open members include AT&T, IBM, Digital Equipment Corp., Fujitsu Ltd., Hitachi Ltd., Unisys Corp. and Sun Microsystems, Inc.

"It's one thing to have an operating system that is compliant with a standard," said Judith Hurwitz of Patricia Seybold's Office Computing Group in Boston. "But you're really talking to yourself if you don't have applications that are compliant or have users that write applications that are compliant."

Users already involved in the X/Open users' councils said last week that they are pleased with the change in policy. "We're talking to them about how our existing systems can be made to interoperate," said Tim Cutler, manager of information systems at Eastman Kodak Co.'s Kodak Park. "That doesn't mean that users are necessarily going to go on a spree of switching vendors, but it does mean we're going to base our purchase of computer products on the vendors' compliance with open systems."

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Banyan unplugs network server

BY JOANIE M. WEXLER
CW STAFF

WESTBORO, Mass. — Shifting its marketing gears yet again, Banyan Systems, Inc. has decided to abort an 18-month, behind-the-scenes effort to develop a reduced instruction set computing-based, fault-tolerant network server — a move that will pare down the company's hardware staff by 40 people during the next nine months.

Banyan originally got into the server business "by default" to accommodate its Virtual Networking Software (Vines) network operating system, which distracted the company from its primary mission of providing networking software and confused the industry about the firm's strengths, according to Senior Vice-President James E. Allchin.

He added that the firm plans to pump the cash it saves from the abandoned development effort into porting Vines to hardware platforms other than Banyan's own CNS servers and the 40 additional platforms that are currently certified as Vines servers.

The company said it intends to expand Vines support across additional vendors' Intel Corp. 80286-, 80386- and 1486-based computers, as well as Compaq Computer Corp.'s Systempro machines and clones.

CNS support pledged

However, Allchin said that Banyan would continue to produce, enhance and support its CNS line, although the company "will not step up its speed" if and when faster microprocessors begin to hit the market. "We'll provide hardware support for five years after the final CNS server ships," he said.

Allchin noted that four years ago, server sales accounted for 80% of the firm's revenue, a figure that has since dropped to one-third of Banyan's $100 million-per-year revenue.

"We're a strategic software company," he said. "Let's face it — the margins are better in software."

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HEWLETT PACKARD

Hitachi and Motorola settle patent infringement dispute

The two firms agree to jointly withdraw pending court cases

BY MAURA J. HARRINGTON
CW STAFF

Making good on a promise made last June to reach an agreement, Japan's Hitachi Ltd. and Schaumburg, Ill.-based Motorola, Inc. reached a settlement on all of their outstanding intellectual property disputes regarding Hitachi's H/8 and H/16 microcontrollers and Motorola's 68030 and 88000 family of microprocessors.

Motorola issued a statement last week stating that it will jointly file a motion before the U.S. Court of Appeals for the Federal Circuit and the U.S. District Court for the Western District of Texas (the Austin Division) requesting the withdrawal of all pending cases involving the two companies' microcontroller and microprocessor disputes.

While neither company would comment on the specifics of the settlement, Michael Slater, editor and publisher of "The Microprocessor Report" said the settlement will probably not have any impact on users.

However, according to Slater, "Motorola achieved [its] goal in crippling Hitachi's marketing efforts of its H8 until it could get fairly close to coming out with a competitive product."

In his comment, Slater was referring to a decision made last March by Judge Lucius D. Bunton III of the U.S. District Court for the Western District of Texas in which he ruled that Hitachi's H8/532 microcontroller infringes on Motorola's patents.

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Network General pulls Watchdog

BY JIM NASH
CW STAFF

MENLO PARK, Calif. — Network General Corp. is smarting after discovering that network technology can overshoot user needs.

Even as it announced enhancements to Sniffer, its high-end local-area network analyzer late last month, Network General pulled Watchdog, a low-end LAN monitor, off reseller shelves. Harry Saal, president and chief executive officer at Network General, said he had misjudged the network sophistication of companies with smaller LANs.

By week's end, the error had cost Network General significantly: Its stock bottomed out at $4.50 per share before rising again this week. While some of the slide can be attributed to a bear market, company sources acknowledged that the firm's decision played a significant part in the slide.

Greg Scott, computing services manager at Oregon State University's business school, said he gave Watchdog a four-day tryout and found it lacking. He complained about the device's front end.

"It had a really clunky user interface," Scott said. "In this day and age, it's a crime to be writing front ends that are so hard to use." He explained that overly structured layering slowed him down as he used Watchdog. Scott suggested that it should support Microsoft Corp.'s Windows and mouse applications.

Network General sought to expand its single product line earlier this year with Watchdog. Instead, it will end up spending at least $200,000 to buy back stock from resellers and defer production of new monitor software.

Watchdog off guard

Saal said that effective this month, the company will market Watchdog solely through manufacturers' representatives, along with the Sniffer analyzer. Watchdog, priced at $1,995, was targeted at companies with medium-size homogeneous networks as well as large multi-LAN corporations needing a monitor on individual networks.

Some companies at both ends of that spectrum will be hit by the retreat from resellers. The U.S. Geological Survey (USGS) has thousands of networked workstations, according to USGS computer engineer Richard Jenson. However, its Menlo Park site purchased three Watchdogs to monitor three key LANs. Jenson also purchased Network General's Watchmaster, a Watchdog-dedicated console, at the same time.

Network General has said it will put production of the console on hold to satisfy the monitoring demands of larger companies that do not need the console. Jenson said he has been forced to buy software and load it onto a workstation to take Watchmaster's place.

John Rohal, an analyst at Arthur D. Little, Inc., said he sensed confusion in the market and among users after seeing Network General's demonstration at Networld '90 Dallas.

"There was a barrage of messages about what users should want from Watchdog," Rohal said.

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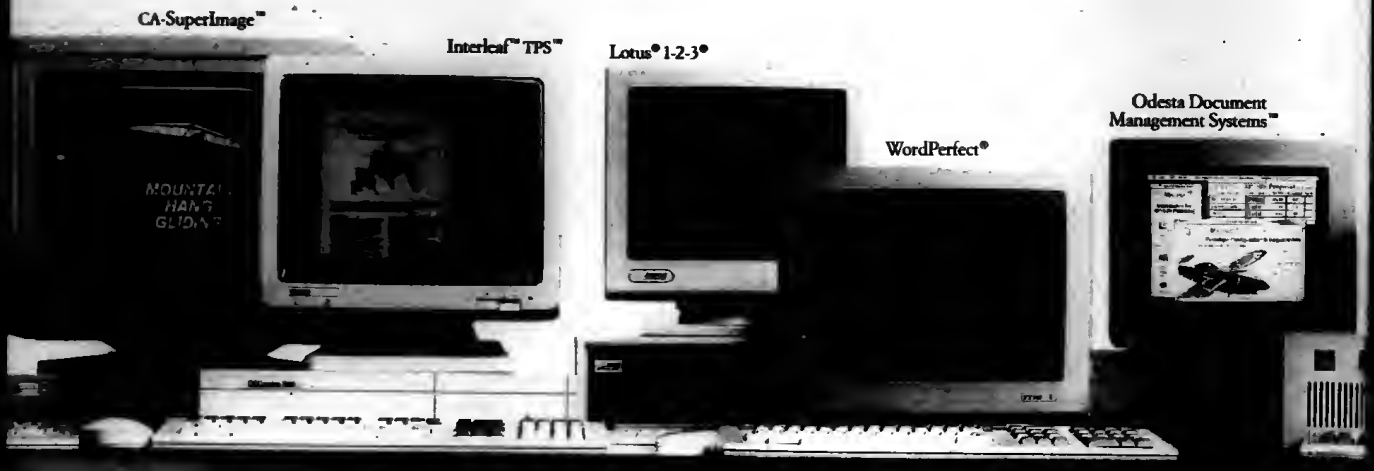

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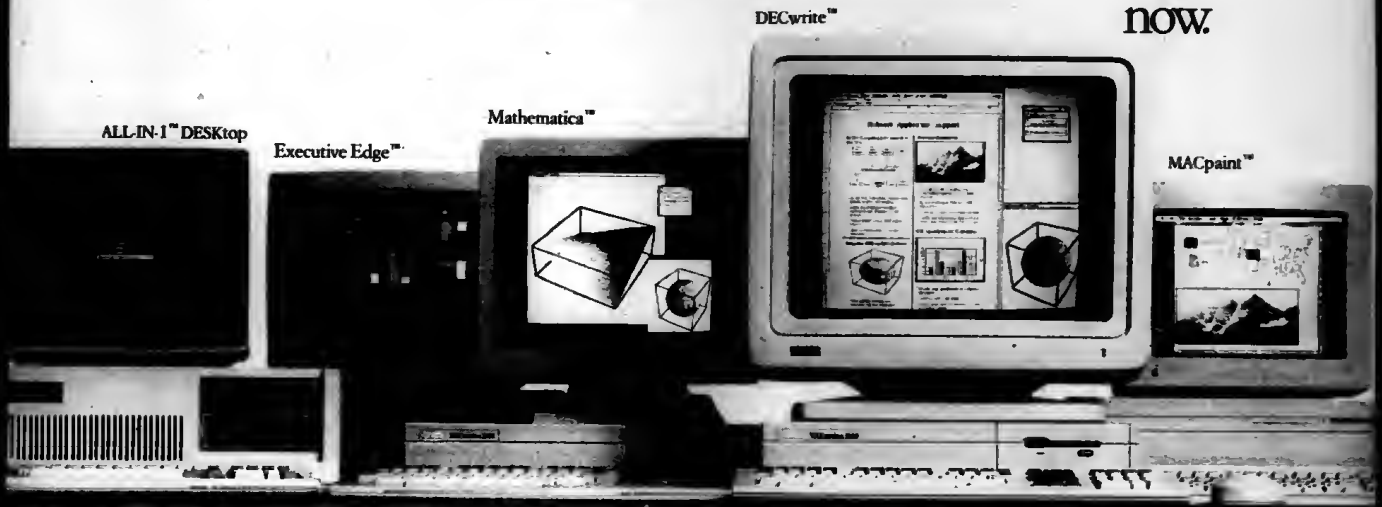

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Fast fiber splices

■ GTE Fiber Optic Products said recently it has a new fiber-optic splice available that will revolutionize the way fiber-optic cables are linked. Called the Fastomeric splice, the new product uses no adhesive or special tools for assembly, a major advance in fiber-optic splices, the company said. The splice is created simply by inserting prepared optical fibers into each end of the splice and snapping into place end caps marked with a fiber-cleave gauge.

LAN without wires

■ NCR Corp. said recently that it is the first major vendor to introduce a high-speed wireless local-area network interface card. Called the NCR Wave LAN, it transmits data at 2M bit/sec., more than nine times faster than any other wireless LAN now available, NCR said. The card is also compatible with Novell, Inc.'s Netware and features spread spectrum frequency technology, which features highly reliable and secure data transmission without interference or interception. The Wave LAN has a suggested retail price of $1,390 for the Network Interface Card, including Novell drivers and an omnidirectional antenna. An optional Data Encryption Standard feature sells for $90.

LCD patent in focus

■ In Focus Systems, Inc. said last week that it was awarded a patent for a high-resolution — 1,280 by 1,024 pixels or greater — monochrome LCD. Prior attempts of LCD makers to design high-resolution LCDs were hindered by inadequate refresh rates. In Focus solved the problem by stacking two 1,280- by 512-pixel LCD panels, using a process called interdigitating. Each panel contains alternating rows of active and inactive pixels that are staggered so that each active row aligns with an inactive row. Interdigitating the panels reduces the number of rows that must be refreshed by a panel.

Packing some sense into computers

MCC works on a knowledge base of the things everybody — but machines — knows

BY GLENN RIFKIN
CW STAFF

When the film *2001: A Space Odyssey* appeared in 1969, it sent people's expectations of intelligent computers to a new and vastly higher level. HAL could not only compute, but could reason, conceive mischief and react to its environment with intelligence and cunning.

Since then, people have waited in great anticipation for computers to achieve a similar level of intelligence. Unfortunately, the great expectations for artificial intelligence have been tempered by the harsh reality that there are no shortcuts to building intelligence into machines.

In 1984, a young Stanford University-educated computer scientist, Doug Lenat, decided to manually construct a knowledge base for computers that would build common sense into software. Such concepts as "animals live for a single, solid interval of time" or "nothing can be in two places at once" are simply not available in machine knowledge. Lenat reasoned that computers needed access to general knowledge — knowledge that was so obvious that the encyclopedia omitted it — before these machines could approach useful intelligence.

Zigy Kaluzny

MCC's Doug Lenat *views his Cyc database of common knowledge*

What's missing?

"We're driven constantly by examples of what is not there rather than what is there," Lenat said from his office at Microelectronics and Computer Technology Corp. (MCC). "People fall back on general knowledge, but computer programs can't do that; they don't learn very well on their own. In fact, all avenues are closed to software today."

With that in mind, Lenat came to MCC and embarked on a 10-year project he called Cyc (from en-*cyc*-lopedia). The goal is to create a single, intelligent system whose knowledge base contains tens of millions of facts, beliefs, categories, relations and problem-solving methods that define our reality. Six years into the enormous effort, Lenat claims to be more than halfway to his goal and says that Cyc, which began with about a 10% chance of success, is now at a 60% or 70% chance of achieving its objective.

"Almost all software in the 21st century will be based on a platform of common sense," Lenat predicted. "It will be unthinkable to write a program not based on common sense."

Lenat and his team of researchers scan newspapers and magazines daily, along with scores of books and pamphlets seeking examples of what is not there — that is, the information that the writer assumed the reader knew. Armed with these countless bits of facts and assumptions, the Cyc team has developed a language (CycL) and a structure for the knowledge base.

Current expert systems, made up of a knowledge base and an inference engine, are brittle, Lenat said. They are unable to cope with unexpected situations, thus rendering most of the usable intelligence out of them. Cyc incorporates an ever-expanding knowledge base along with 25 inference engines. "Learning occurs at the edge of what you know; the more you know, the more you can learn," Lenat said. "This fact has held back machine learning for 20 years."

The painstaking task of manually embedding facts into Cyc will certainly take the project until 1995 and likely beyond. "Perhaps the hardest truth to face — one that AI has been trying to wriggle out of for 34 years — is that there's probably no elegant, effortless way to obtain that immense knowlege base," Lenat stated in a mid-project report. "Rather, the bulk of the effort must — at least initially — be manual entry of assertion after assertion."

The Cyc project exists with the financial assistance of companies such as Digital Equipment Corp., Apple Computer, Inc., Bellcore, Harris Corp., Eastman Kodak Co. and NCR Corp., all members of the MCC consortium. Each contribute $500,000 annually to the project, freeing Lenat from the pressures he would face in an academic environment. "This project was impossible to do in academia in the '80s," Lenat said. "No single company, not even one like DEC, would fund a multi-million-dollar project with a 10% chance of success."

At MCC, Lenat has had the luxury to spend what he terms "two person centuries" to create Cyc.

The first fruits of the labor are already transferring to MCC's shareholders. Bellcore is working on a customer adviser assistant that would give one of its member companies, US West, on-line advice for solving customer problems. DEC is developing its Sizer expert system based on Cyc.

John McDermott, head of DEC's AI research group, said customers often want to handle complex, specialized tasks and have difficulty determining the size of the system they are going to need. Because of the specialized nature of the problem, a customer cannot buy the solution off the shelf, so they now require a DEC sales representative to come in and spend several months analyzing the system's requirements.

Sizer will incorporate a large knowledge base with both specialized and commonsense information. It will allow a DEC salesman to make a qualified sizing estimate in minutes rather than months based on the parameters of the customer's needs. "A knowledge base will have gaps, so we need a system with common sense, one that can reason by analogy," McDermott said. "Cyc is a good tool for building up such a knowledge base."

Self-adjusting

Eventually, Lenat expects Cyc to be able to program new information into itself automatically. Even today, the computer system on which Cyc is built spends each evening analyzing and "contemplating" the information it received that day. When complete, Cyc will contain 5 billion bytes of information — 10,000 times larger than a typical expert system today.

Most importantly, Lenat's work is considered "breakthrough" level technology. Gordon Bell, creator of the DEC VAX and currently chief scientist at Stardent Computer, Inc., said that Cyc "could provide the U.S. with a competitive advantage in the global marketplace. It could make MCC worthwhile all by itself."

Added DEC's McDermott: "Cyc is definitely a breakthrough project. Doug has defined the right way to go about using large amounts of knowledge. Just the fact that he is doing it is critical. Somebody has to."

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EDITORIAL

Distant thunder

WHEN YOU CONSIDER that 75% of those who will be in the work force in the year 2000 are already in the work force, it is clear why we all should be concerned with what that work force will look like. After all, most of us will still be a part of it, perhaps holding professional managerial positions, too.

In the information systems area, the current thinking is that the demand for skilled professionals will outstrip the supply by a substantial margin, not only here but in Japan and Western Europe as well.

In the U.S., the facts are these: The overall labor force will grow only 1.2% per year in the 1990s — more than twice as slowly as the growth rate of the 1970s. The labor force in Japan and Europe will actually decline.

Fully 80% of the meager labor-force growth in the U.S will be composed of immigrants, minorities and women. Only 45% of the labor force in the year 2000 will be white males, whose numbers have dominated IS employment.

Meanwhile, on the education front, the number of college freshmen planning computer-related majors is less than half of what it was just eight years ago. Half of the MIS doctoral candidates in the U.S. are foreign students, who increasingly are returning to their native lands on completing their education.

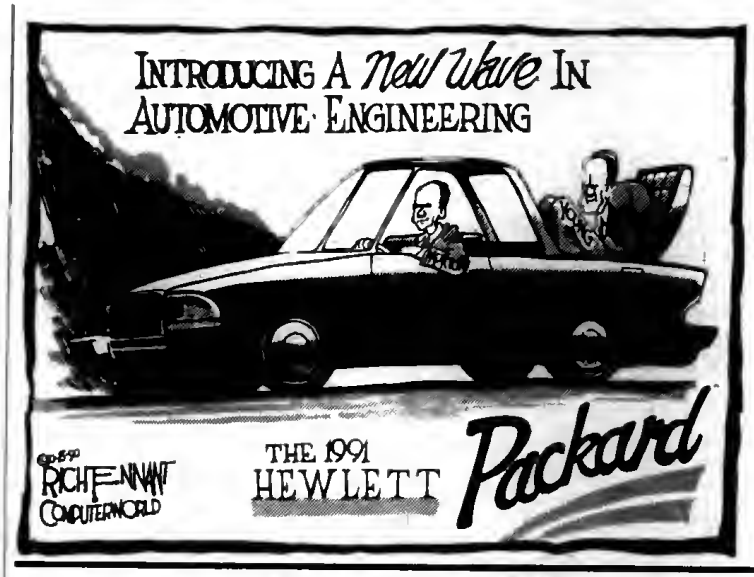
As a nation of government institutions and private companies, how are we responding to this looming crisis?

On the local level, our public schools are in turmoil. One 18-year-old in five is illiterate — *one in five*. Last year, a sample of 13-year-olds from the U.S. finished dead last in math, ninth in science and 11th in homework when measured against children from 11 other countries. Our kids finished first in one category — television viewing — by watching five hours or more of TV daily.

On the national level, the number of federally funded fellowships and traineeships fell from 60,000 in 1970 to less than 13,000 in 1986. In the last 10 years, the value of Pell grants, the major federal assistance program for undergraduates, has been cut in half. Measured in real dollars, the education budget of President Bush — the avowed education president — is smaller than President Reagan's budget of 1989.

If the threat of a shortage of IS labor isn't enough to scare you, consider what the beginnings of worker shortages are doing in Japan. According to Coopers & Lybrand's Tokyo office, new IS hires are demanding up to $16,000 *more* than existing staff, and wage increases among some IS titles are running at 20% per year.

As the federal government, several state governments and local communities across the land struggle with the worst fiscal crunch in memory, we must not lose sight of the future and that part of our destiny we still control. We must move beyond the rhetoric of politics and realize the tremendous stake we all have in facing a national crisis before it becomes a total national disgrace.



LETTERS TO THE EDITOR

DBMS downsizing

The real problem facing relational database management system vendors is that many prospects who used to be willing to pay $500,000 for a departmental computer and $50,000 for a RDBMS are deciding to buy a $5,000 personal computer and a $500 RDBMS instead. Some of them are the same prospects who concluded that buying a $5 million mainframe computer and a $500,000 RDBMS didn't make sense a few years ago when they could buy a departmental computer and RDBMS for a tenth the cost.

Just think: Customers of RDBMS vendors can buy a PC-based RDBMS for a hundredth of the cost of a departmental computer version. This represents quite a problem for any vendor, particularly when a company's overhead structure is geared to much larger, individual sales. Sales can slow down faster than expenses can be cut. It's like a plane in a deadly spiral. It's no fun, and there is no painless solution.

John J. Cullinane
President
The Cullinane Group, Inc.
Cambridge, Mass.

Language barrier

I read with interest the article "Beware the dark side of 4GLs" [CW, Aug. 27].

As a systems programmer who has installed and supported many vendors' fourth-generation language (4GL) offerings, I would like to add an additional caveat. In my experience, procedural languages, such as Cobol, Fortran and others, have ANSI standard versions at their cores. 4GLs, on the other hand, have only their individual vendor standards behind them.

I have found that each new release of many of the 4GLs currently available includes a thick stack of PTFs that needs to be applied to the new version if you want things such as field justification or translation to behave in the same way it did before the upgrade. In many shops that I have been in, this has led to the need to choose between applying the PTF and thereby neutralizing some gee-whiz new function or patching every 4GL application program in the system so that it will work according to the "new standard."

This has led to the decision in some shops to use 4GLs only for prototyping and quick-and-dirty applications. "Real" production applications are written in CICS, Cobol or some other "standard" language.

I think that it is unfortunate that vendors can't maintain upward compatibility, because 4GLs have many benefits and strengths.

Gregory A. Randis
Systems Programmer
Inglewood, Calif.

Name calling

I am writing for all the systems programmers who seem to have fallen through a large crack in your "Annual Salary Survey" [CW, Sept. 3]. Maybe you at *Computerworld* believe that those who call themselves systems analysts are really systems programmers undergoing analysis so they demand lower salaries. What exactly is an "operating systems programmer?" Do they work on OS systems? Haven't you heard about MVS? What about VSE?

I recently attended a "technical" third-party software vendor's educational course. When the 50 attendees listed their job titles, 45 called themselves "systems analysts," and all listed their duties as "technical" as opposed to "end user." I was the only "systems programmer" listed. Yet, when I asked a simple question on VSAM share options, the instructors and students demurred. They would "get back to me later on that one." I realized these were not the bits-and-bytes people I thought they were.

Where were your definitions of the job categories for the benefit of the nontechnical *Computerworld* reader? You may be assured that some of the job titles listed overlap, are ambiguous or generally cause confusion to the unindoctrinated.

We systems programmers are not systems analysts, although we seem to have been dumped in with them. Perhaps the systems analysts were the only ones not too busy to respond to your survey.

Those who can, do. Those who can't would probably like a nice job at *Computerworld* as a data processing specialist.

David L. Gallinson
Corporate Supervisor of Systems
Benjamin Moore & Co.
Montvale, N.J.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include phone number for verification.*

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80. Government - State/Federal/Local
85. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
95. Computer/Peripheral Dealer/Distr./Retailer
75. User Other _____
95. Vendor Other _____
(Please specify)

TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Comm
22. Dir./Mgr. Tech. Planning, Adm. Svcs. Data Comm Network Sys. Mgt. Dir./Mgr. PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs. Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
66. Sys. Integrators/VARs/Consulting Mgt
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgt.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
51. Sales & Mktg. Management
OTHER PROFESSIONALS
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80. Educator, Journalists, Librarians, Students
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B. Minicomputers/Small Business Computers
C. Microcomputers/Desktops
D. Communications Systems
E. Local Area Networks
E. No Computer Involvement

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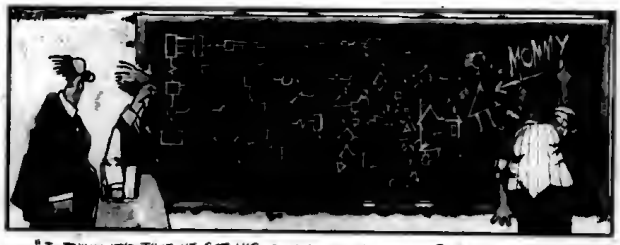

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70. Mining/Construction/Petroleum/Refining/Agric
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
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75. User Other _____
95. Vendor Other _____
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21. Dir./Mgr. MIS Services, Information Comm
22. Dir./Mgr. Tech. Planning, Adm. Svcs. Data Comm Network Sys. Mgt. Dir./Mgr. PC Resources
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Mgrs. Supvr. of Programming, Software Dev.
32. Programmers, Software Developers
66. Sys. Integrators/VARs/Consulting Mgt
OTHER COMPANY MANAGEMENT
11. President, Owner/Partner, General Mgt.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
41. Engineering, Scientific, R&D, Tech. Mgt.
51. Sales & Mktg. Management
OTHER PROFESSIONALS
70. Medical, Legal, Accounting Mgt.
80. Educator, Journalists, Librarians, Students
95. Others _____
(Please specify)

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Types of equipment with which you are personally involved either as a user, vendor, or consultant.
A. Mainframes/Supermins
B. Minicomputers/Small Business Computers
C. Microcomputers/Desktops
D. Communications Systems
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A whole new ball game

CLINTON WILDER

The Oakland Athletics' Tony LaRussa is considered a member of the "new breed" of baseball manager. Instead of the traditional hard-knock experience of years in *Bull Durham*-type minor league towns, LaRussa possesses a law degree. He has broken the mold of the tobacco-chewing, go-get-'em-boys dugout denizen with a reputation for intelligence, preparedness and an insatiable appetite for strategic information.

He is also the best manager in baseball today and will be leading his As into their third straight World Series tomorrow night.

In the IS world, a new breed of successful manager is also emerging — younger, more business-savvy and increasingly aware of the forces far from the data center that shape a company's success or failure. These new managers may have backgrounds in consulting, marketing, finance, manufacturing or strategic planning. Increasingly, many of them are women.

Like a newly appointed baseball manager, they usually arrive with a mandate for change. The old ways of managing IS — the things that made a company successful in the past — don't work anymore. The options of downsizing, decentralizing and outsourcing, anathema to some tradition-bound IS shops, are high on the agenda of the new manager. Not necessarily to implement but certainly to consider.

Although LaRussa is the best example of the new breed of baseball manager, he is not alone. Look among baseball's most successful teams, and more often than not, you'll see this new type of manager: young, intense, perhaps less colorful than the crusty skipper of old but also more cerebral.

Both division-winning National League managers, Pittsburgh's Jim Leyland and Cincinnati's Lou Piniella (in his first season with the team), are also examples. Current White Sox manager Jeff Torborg, a favorite to win Manager of the Year honors for leading a team of young unknowns to baseball's third-best record, is another good example.

Appropriately, too, these managers are themselves computer-literate. LaRussa, Torborg, the Texas Rangers' Bobby Valentine and others are noted for their use of PC databases to analyze pitching matchups, pinch-hitting decisions, placement of fielders and scores of other strategic factors that can turn losses into wins.

It doesn't always work — baseball PC pioneer Davey Johnson was fired as the New York Mets' manager this year — but it does exemplify an innovative approach to the Grand Ol' Game.

Nicolas Ancio

This is not to say that every company needs new blood in IS management. In baseball, there are several highly successful old-line, old-school managers: Tommy Lasorda in Los Angeles, Roger Craig in San Francisco, Joe Morgan in Boston, Sparky Anderson in Detroit. Their style continues to work well in their respective organizations, and major-league baseball franchises can be as different from each other in corporate culture as Apple is from IBM.

IS management is becoming like baseball management in another way: job security. A losing record, or a failed systems project, is not always the reason for a firing — clashing with the established corporate culture can also do it. New York Yankees managers have an even shorter job life expectancy than CIOs.

And how about dealing with the skills shortage? Top-notch pitchers and catchers are becoming as scarce as crack global network managers or C++ programming whizzes. Of course, big bucks are important in attracting them — but so is having a stable organization and a manager with a reputation for treating "players" with respect while getting top performances out of them. Just ask Rickey Henderson to compare the Oakland clubhouse atmosphere with the one he left behind in the Bronx.

Like many a successful IS manager, LaRussa has the benefit of working for perhaps the most progressive organization in baseball today. Harvard-educated Oakland general manager Sandy Alderson has engineered a dramatic turnaround of the team's fortunes both on and off the field — a strong high-level executive sponsor if there ever was one. I wouldn't be surprised if he uses a PC, too. On the other end of the spectrum, there is (or was) George Steinbrenner.

More than any other professional sport, baseball thrives on the use of information for competitive advantage. Sure there's no substitute for talent; if a Roger Clemens or Dave Stewart is "on," all the right strategy in the world isn't going to come close to beating him.

But consistently having the right batter at the plate or throwing the right pitch in a game-deciding situation will separate the successful teams from the also-rans.

In baseball, as in business, the manager who uses the best data to make the most effective decisions will come out on top in the long run. And the new breed, in baseball and IS, is proving that to be truer than ever in the '90s.

In fact, that's why they're called *managers*.

Wilder is *Computerworld*'s senior editor, management and a former sports-writer.

Aspiring managers: Don't flatten any ducks

MICHAEL COHN

If you are an information systems manager, skip this article. Please flip to another page. Catch up on Systems & Software. Go ahead and peruse the Careers section.

Only nonmanagers should read on. I'm quite serious about this. Yet I suspect a few managers are still sticking with this piece.

Stop reading it! You won't be interested! It's a very technical discussion about denormalizing relational tables.

There, that should have scared them off. Now for the rest of us . . . have you ever wondered why those folks are managers while we remain aspiring nonmanagers?

It's got nothing to do with experience or talent or marrying the chief financial officer's overweight cousin. However, if the CFO's overweight cousin is available, a couple of dates might not be a bad idea.

What really matters in crawling your way up the management ladder is learning to speak management lingo.

Don't waste your time with buzzwords and acronyms. Don't try to sound intelligent; people will expect you to code something.

If you want to *be* in management, you have to *sound* like management.

Now don't get worked up about this. Don't fork over 40 grand for an MBA. I've saved you all that pain and suffering by listing below the hottest management phrases bouncing around the boardroom today.

Memorize them! Of course, they're not as exciting as "Stop the presses!" or "Is there a doctor in the house?" but you'll knock the socks off the chief information officer at the next big meeting.

Come to think of it, I did once get to yell, "Is there a doctor in the house?" in a crowded restaurant. Three people came running . . . they were lawyers.

- **Let's take that off-line.** If you want to be an IS manager, keep this phrase in your arsenal. It comes in particularly handy when you've just come up with this great idea, called a meeting about this great idea, told everyone about this great idea and then someone brings up a point that makes you look like an idiot.
- **Get everyone on board.** In IS, it doesn't matter if your idea is good or bad. As long as "everyone's on board," you really can't get into trouble, but when everyone's not on board, it's a bad thing.

Some folks are busy getting their feet wet. Some are in hot water. Still others are in over their heads. These guys are probably not on board. Some people get on board who you really wish were overboard. Most often, people miss the boat altogether.

- **What's the bottom line?** You hear this a lot when a meeting has run over by 10 minutes. IS managers are too sophisticated to say, "Get to the point, Chuck," or "Put a lid on it, Chuck." Instead, they say, "What's the bottom line?" Then you and Chuck and everybody else hurry off to the cafeteria before they stop serving frozen yogurt.
- **I hate to say "I told you so."** In management lingo, this means the same thing as "I told you so."
- **I'm just playing devil's advocate.** IS managers are not allowed to argue with people and call them funny names. That's considered unprofessional. But if you first say, "Look I'm just playing devil's advocate," then you can use any funny names you want.

To be on the safe side, only play devil's advocate with people a lot smaller than you.

- **The best-case scenario.** IS managers talk about this all the time, especially when they're trying to get you to work on something.
- **The worst-case scenario.** IS managers talk about this all the time, especially after you've started working on something.
- **Let's not reinvent the wheel.** IS managers are ready with this when they're asked to do a bunch of work. It's the same as saying, "We did that before, let's not do it again."

Of course, it's also the same as saying, "We did that before, and boy did we screw it up." IS managers hope no one can tell the difference.

> IS MANAGERS ARE too sophisticated to say, "Get to the point, Chuck," or "Put a lid on it, Chuck." Instead, they say, "What's the bottom line?" Then you and Chuck and everybody else hurry off to the cafeteria before they stop serving frozen yogurt.

- **First thing in the morning.** This phrase describes how IS managers tackle all of the tough problems that come up just before bowling league.
- **Ducks in a row.** Don't be confused by this phrase. IS managers don't really chase ducks around the office trying to get them in a straight line. Nowadays, you can go out and buy them that way.

When IS managers are about to go live with a really big system, this is the way they get ready.

- **Rubber meets the road.** This is when IS managers find out if they were ready. Usually, when the rubber meets the road, it flattens all their ducks.

Cohn is trying to be a computer salesman in Atlanta.

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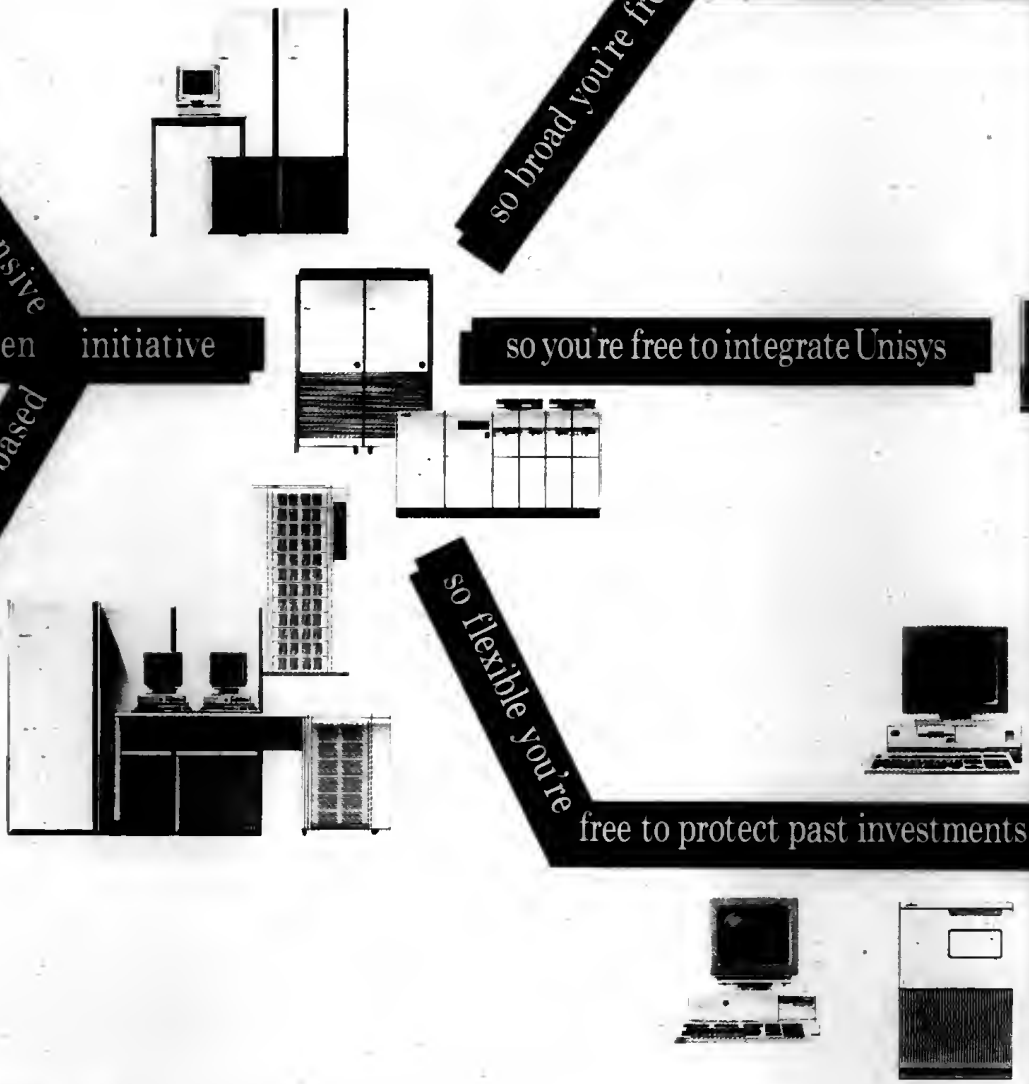

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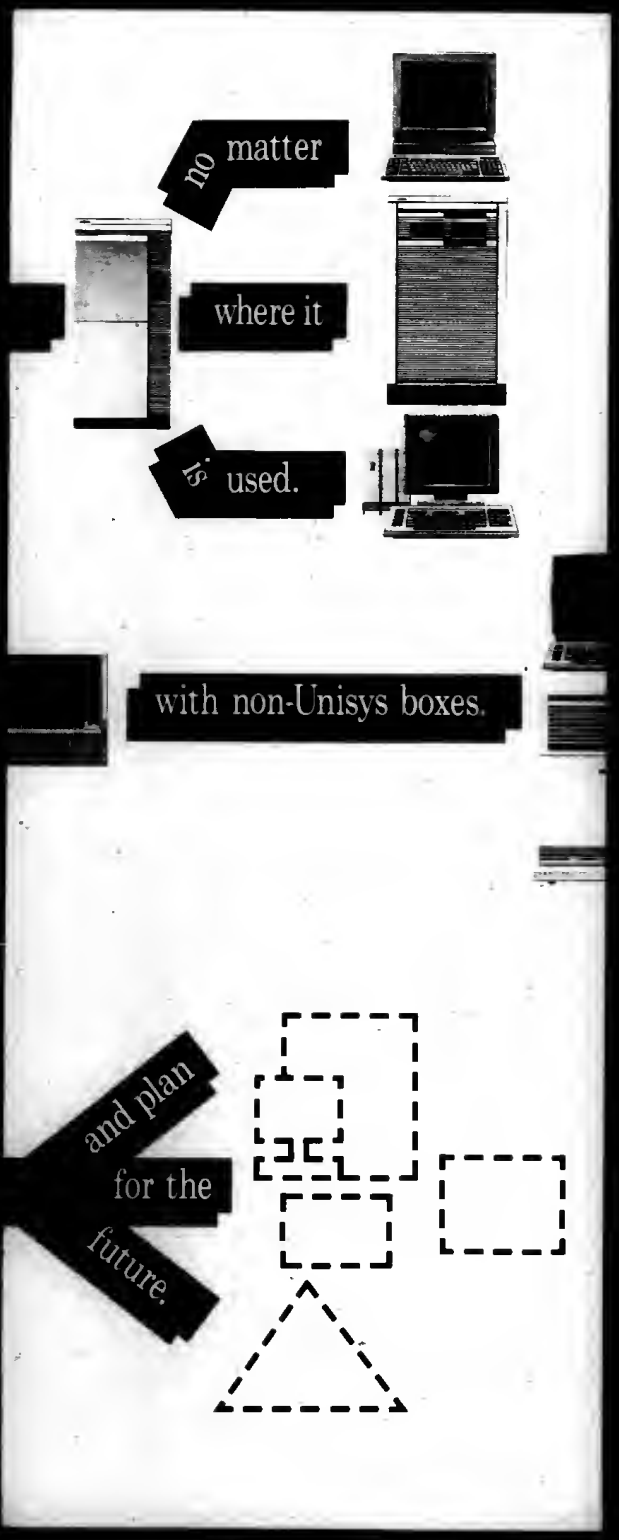

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COMMENTARY

Maryfran Johnson

The one to watch

IBM is turning its gigantic gaze on a technology that IS folks ignore at their peril: geographic information systems, or GIS.

Starting out years ago as the mainframe-oriented province of government engineers and scientists, oil companies and natural resource managers, GIS is the catch-all term for the hardware, software and services involved in gathering and managing geographic or spatial data.

Today, GIS applications run on powerful graphics workstations and high-end personal computers. They can be as basic as a database of ZIP codes or street addresses or as complex as satellite imagery or digitized maps of major cities.

"I would tell MIS managers that if they haven't seen GIS yet, it's not a matter of *if* they will but *when* they will," said Glenn Montgomery, president of GIS Research in Englewood, Colo. "IBM is really pouring jet fuel into this."

Since 1988, IBM has been focusing greater resources on developing GIS applications and is only now recovering from its reputation of indifference to the field. The computer giant cemented new business alliances with leading GIS vendors such as the Environmental Systems Research Institute, TYDAC Technologies and Geovision, Inc. This year, IBM opened an additional six GIS Solutions Centers in the U.S., bringing the

Continued on page 36

IBM restates it has a way to go

Users left to wonder when multiplatform distributed databases will ship

BY ROSEMARY HAMILTON
CW STAFF

IBM recently dropped another hint that the reality of a full-blown distributed database environment is years away.

Larry Morgan, a senior programmer at IBM's Santa Teresa Laboratory in San Jose, Calif., said in an interview recently that the OS/2 and OS/400 capabilities will be available "around the time frame" that the distributed mainframe database capabilities begin shipping.

The problem is, no one knows when that will be. In September, when IBM announced the DB2-to-SQL/DS distributed feature, it announced no shipping date. Instead, it said it would announce an availability date before September 1991.

Nonetheless, Morgan's schedule gives a slight boost to the OS/2 and OS/400 platforms, both of which have been on the sidelines of most recent IBM distributed database developments.

While IBM has had both SQL/DS-to-SQL/DS and DB2-to-DB2 capabilities on the market for more than a year, it had announced nothing specific for OS/400.

Earlier this year, it announced an OS/2-to-OS/2 feature but still had not specified when it would connect the workstation platform to the bigger databases.

Blame it on the database

George Zagelow, director of architecture and standards at the Santa Teresa lab, said that OS/400 developments have been slow because the database was the least up-to-date of the four Systems Application Architecture (SAA) databases on IBM SQL standards.

"SQL/400 had the biggest hurdle to jump," Zagelow said. "They are still pulling hard, and they have products coming."

Morgan said IBM is prepared to announce like-to-like and any-to-any capabilities for the OS/400 platform and links to host database systems for OS/2 in the time frame he indicated.

The like-to-like capability is the easier technical challenge and gives one database access to other like databases. Currently, some users are exploring the DB2-to-DB2 capability, which allows them limited access among DB2 databases.

The any-to-any feature is a more complex goal. It will eventually provide a so-called seamless SAA database environment. The idea is to allow a user in one of the four SAA databases to request and receive data that resides in any of the other SAA databases. The user need never know where the data actually resides.

FEATURE: USER/VENDOR RELATIONS

Will CDC customers take flight?

BY BARBARA DEPOMPA
SPECIAL TO CW

The 1980s were no picnic for Control Data Corp. as the company struggled to consolidate after years of overdiversification. The 1990s may not be any easier as the Minneapolis-based firm tries to calm a customer base made skittish by uncertainty about both the company's future and the sluggish U.S. economy.

Because CDC has consolidated, sold off or discontinued many of its businesses, there is concern among customers about the long-term viability of CDC products, such as its Cyber mainframes and the aging, proprietary NOS/VE operating system, according to Charles Casale, an analyst at Boston-based Aberdeen Group and a CDC veteran.

CDC is countering this concern with a plan to migrate its current Cyber mainframe customers to a Unix-based hardware platform by the mid-1990s, according to Jim Ousley, president of CDC's Computer Products Division. In keeping with the computer industry's growing standards push, CDC has unveiled systems developed by Mips Computer Systems, Inc. that feature reduced instruction set computing-based Unix processing.

Fran O'Neill

The company has also targeted future developments at the scientific/engineering arena and foreign markets, lessening its head-on competition against IBM in the general commercial computer market, Ousley says.

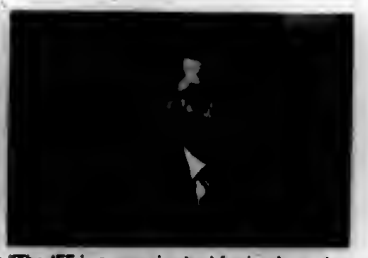
Most users say they are waiting CDC out because of the investment they have in the firm's technologies.

"We have a huge investment in applications that were developed in-house on the Cyber systems," says Arnold Acedo, manager of computer services at the Garrett Engine Division of Allied Signal Aerospace in Phoenix.

Garrett Engine plans to maintain its current roster of two Cyber 990s, a

Continued on page 34

The IEF™ can help you devel unprecedented quality, prod



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Maintenance productivity gains of up to 10-to-1.

In this same study, developers were asked to compare IEF maintenance productivity with their former methods. Of those responding, *more than 80 percent had experienced gains of from 2-to-1 to 10-to-1.* (See chart.)

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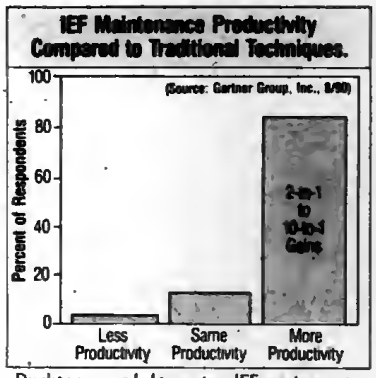

Developers were asked to compare IEF maintenance to former methods. Of those responding, more than 80% reported productivity gains of from 2-to-1 to 10-to-1.

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Paper age ends as supplier picks Pick

ON SITE

BY GARY H. ANTHES
CW STAFF

NEWPORT NEWS, Va. — Ferguson Enterprises, Inc., the largest distributor of plumbing and heating supplies in the U.S., has in six short years propelled its information processing technology from the 19th century directly toward the 21st.

The $600 million company is completing a cutover to the largest Sequoia Systems, Inc. installation and the largest Pick operating system environment in the world as part of a $5.8 million fault-tolerant system supporting 2,000 users in 19 states.

In 1984, the $200 million firm had no computer systems and was proud of it, said Thomas M. Ward Jr., manager of information systems: "We were probably the largest nonautomated firm in the U.S. Our manual systems were second to none. They even told you where to put a staple on a document."

However, getting the staple in the right place could only carry the company so far, and success of the manual systems required meticulous training that became increasingly difficult to provide in the rapidly growing company, Ward said. Ferguson began sending its inventory management work to a computer service bureau.

Take it in-house

That first step away from paper proved short-lived. Almost immediately, Ferguson realized that its customer service goals were incompatible with the slow turnaround offered by the service bureau's batch processing. An in-house system, resisted for so long, seemed the only answer.

Late in 1984, Ferguson turned to Wilton, Conn.-based Ultimate Data Systems, buying the source code to Supply House Information System (Shims), a package that included order entry, inventory management, purchasing, billing and accounting. Ferguson also bought 12 Honeywell minicomputers running the Pick operating system, for which Shims was written.

The plumbing supply wholesaler spent the next four years setting up six regional data centers supporting 176 sites in the South and Midwest.

"We thought that would be the end, that we'd stop there," Ward said. But the company wanted to be able to do inter-regional inquiries so that parts not in stock in one area could be quickly provided from another.

Also, Ward's staff was spending an inordinate amount of time supporting the multiple-machine environment and the duplicate software, and the minis were running out of steam as the 120 users per machine originally forecast mushroomed to more than 300.

Ward *overcame resistance to automation*

In 1989, Ferguson began looking for a centralized system. The company considered systems from Hewlett-Packard Co., Prime Computer, Inc., Encore Computer Corp. and Sequoia. According to Ward, only Sequoia had his "dream of dreams" — a single machine with high availability running native Pick.

Ward acknowledged that the relative obscurity of Sequoia made Ferguson's management nervous, but a recent agreement by HP to market Sequoia computers gave Sequoia credibility. Ward said he was also impressed by the results of benchmarks, crafted by Ferguson, that showed better than linear improvements in performance as more processors were added to a Sequoia box.

Ferguson is shutting down its regional centers at the rate of one a month now, and Ward expects to have completed the conversion by December. So far, no serious problems have been encountered, he said.

According to Ward, Ferguson greatly underestimated the changes that had to be made to the off-the-shelf software package it bought to run its business, and the Basic programs were completely rewritten by Ferguson. But Pick, whose use was originally mandated by the choice of the package, proved a blessing in disguise, he said.

"I'm in love with it. I'm convinced that one of the reasons our efforts have been so successful is because of Pick," Ward said. "One of the reasons we're at the forefront of our industry is because of our ability to bring out applications quickly. I've never seen an application environment as rich or as easy to use."

But Pick has its drawbacks, Ward acknowledged: "It's a very nonstandard operating system. If you want to talk to the outside world, you pay a penalty. And it's harder to find Pick-trained people, although Pick is not hard to learn."

Ferguson's Sequoia Series 300 Model 364 has 16 Motorola, Inc. 68030 processors, 256M bytes of memory — shadowed by another 256M — and 17.3G of mirrored disks. Ward said Ferguson may eventually do a field upgrade to 68040 processors, boosting capacity to support 4,000 users, which Ferguson could have in about five years.

Shipper taps Unix for transaction processing

BY ELLIS BOOKER
CW STAFF

AKRON, Ohio — The number of firms migrating to Unix for their on-line transaction processing (OLTP) needs increased by one this month with the addition of the Roberts Express shipping company.

By next June, Roberts hopes to have moved a Cobol application for tracking its truck fleet from two Wang Laboratories, Inc. hosts to a multiprocessor Sequent Computer Systems, Inc. computer running Ingres Corp.'s fourth-generation OLTP database.

Roberts' MIS manager, Joe Greulich, acknowledged that he found the open systems solution a hard sell at first.

"If you said 'Unix' to me, I'd say 'university,' " said Greulich, who joined the specialty carrier 1½ years ago.

However, Greulich is now a true believer, convinced that Unix and a relational database will be up to the job. He had better be. The MIS manager revealed that 30% of his pay is tied to response time and availability of the company's information systems.

A subsidiary of Roadway Services, Inc. in Akron, Roberts had revenue of more than $7S million last year. A Wang shop since 1983, it now has two of Wang's biggest platforms — a VS 10000 and a VS 7310 — which together support about 200 users at any given time. The hosts also support all of Roberts' back-office business functions.

Greulich *made open systems switch*

Customer service and operations agents connected to the two VS minicomputers handle more than 100,000 inbound telephone calls per month. The application today runs at approximately 25 to 30 transaction/sec. and is growing.

The OLTP application involves tracking Roberts' fleet of about 1,200 trucks, each of which is equipped with two-way mobile satellite terminals. Every hour, the units report back to the home office in Akron on each vehicle's location, accurate to within 300 yards.

A development system using a two-processor Sequent S81 is currently installed, and another 10-processor, 50 million instruction per second S81 machine will be arriving in the spring to be utilized as the production host.

Chicago-based Ameritech Information Systems, Inc. is acting as the systems integrator for the project. A spokesman at the Ameritech subsidiary said the 18-month contract is by far the most significant OLTP engagement it has ever been involved in.

Although Wang told Greulich that its high-end machines would not directly run Unix, the company has proposed using Roberts' decommissioned hosts to run an imaging system that will be tied to the OLTP application, according to Greulich.

"We're interested in that, and we're looking," Greulich said, adding that he has been very pleased with Wang's service and support.

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CDC

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Cyber 930 and a Cyber 830. However, the company is hedging its bets and has also purchased a Digital Equipment Corp. VAX. Acedo is concerned about the lack of third-party applications available for Cyber mainframes. "The reason we bought the DEC VAX," Acedo says, "is because more applications are available for it than for the CDC processors."

Whether CDC will emerge victorious in its chosen market niches is still in question. Analysts claim that the proprietary NOS/VE operating environment for the Cyber mainframe series is more than 10 years old and has not been enhanced to keep up with competitive advances, such as mainframe partitioning, hyperspace and IBM's AD/Cycle.

Taking into account this lack of a major overhaul of NOS in a decade, "combined with the company's newfound Unix commitment, I don't think they will be in the proprietary mainframe business for the long haul," says Frederick Withington, an independent consultant in New York.

Ousley disagrees, claiming that CDC will continue to upgrade the Cyber systems' proprietary software to protect its customers' investment in software applications. He underscores the company's dedication to maintaining NOS/VE by citing the $365 million, 11-year contract it won with the Army Corps of Engineers for up to 98 Cybers. CDC was awarded the contract over the likes of Electronic Data Systems Corp, the company says.

As of July 1990, eight Army Corps sites have been pilot-tested using the Cyber systems in a networked environment. The systems will be used for a mix of database management, office automation and engineering/scientific applications, according to Ken Calabrese, program administrator within the Army's information systems department handling the Corps of Engineers.

Over the long haul

However, such moves haven't alleviated customer concerns. With the lack of third-party software development, "we are definitely worried about CDC's long-term commitment to its proprietary Cyber systems," says Walter McRae, interim director of university computing and network services at the University of Georgia's Advanced Computational Methods Center in Athens, Ga.

The university currently has one Cyber 960 mainframe and a Cyber vector facility tool for high-performance vector processing. However, both systems have become obsolete for the university's needs.

The university is looking into Unix in the form of a CDC/Mips system as a future platform for its computer services. "The ability to continue to run Cyber's NOS environment and the value-added services, including data center management and communications facilities, that CDC claims it will incorporate into its Unix-based system make them attractive to us," McRae says.

However, he adds, "We have not ruled out looking at other vendors' products."

Ousley says he wants to stem any such thoughts of jumping ship by guaranteeing that the transition from NOS to Unix will be as painless as possible. "We will probably offer a compatibility box and other options to help customers continue to benefit from their current NOS/VE investment," he says.

Until the new systems are ready for delivery, however, all CDC can do is keep trying to win back users' confidence and gain market share. Some of the big wins that CDC has claimed so far include a $32 million sale to the Soviet Union following Soviet President Mikhail Gorbachev's visit to corporate headquarters last summer. The Soviet Union will purchase a variety of equipment and services, including six Cyber 960 mainframes, in order to improve nuclear plant safety within the country.

Gorbachev's visit has since been followed by a visit from Alexander Dubcek, chairman of the Federal Assembly of Czechoslovakia. While no contract has yet been signed, Ousley says he hopes to sell Unix-based workstations for computer-aided design applications in that country.

Thailand's Ministry of the Interior is also planning to stick with CDC systems. A Cyber mainframe is being used to keep track of the population of Thailand. According to Surachai Srisaracam, director of the Central Population Database Center for Thailand's Ministry of the Interior, the system is used to process passports and maintain photo information and monthly statistics on population as well as systems for tax collection, social security, military manpower and criminal investigations.

CDC sees the ever-growing global marketplace as one of its greatest market opportunities. Rather than competing against IBM head on, CDC says it will continue to go after sales in its target markets in the U.S. and pursue more sales in the Soviet Union and other overseas markets opened to foreign trade.

Ousley maintains that CDC has an edge in sales to the Eastern Bloc because of its successful sales efforts there so far.

Depompa is a free-lance writer based in Upper Marlboro, Md.

Revenue shrunk — and so did CDC

CDC pruned at least 12 subsidiaries in the '80s, including ETA Systems, its supercomputer business, and Imprimis, a disk drive operation sold to Seagate Technologies, Inc. The majority of CDC's consolidation occurred between 1986 and 1990, shrinking the company's total revenue from about $3.7 billion in 1985 to an expected $2 billion in 1990.

Ironically, despite greatly reduced revenue, 1990 may be the first year that the slimmed-down CDC achieves a significant profitability level since 1983, when it reported $161.7 million in profits. Analysts currently estimate that CDC is likely to report between $40 million and $60 million in profits for 1990.

Even the Computer Products Group (CPG), the single largest unit of CDC today, has been revamped. According to Jim Ousley, the unit's president, CDC has consolidated CPG to better focus that division's attention on its target markets: primarily scientific and engineering applications and users with large technically-oriented databases — what Ousley refers to as "technical information management."

BARBARA DEPOMPA

Sputtering earnings

CDC has had two profitable years – '87 and '88 – in the last five

CONTROL DATA

	Revenue	Net earnings
1985	$3,680	($568)*
1986	$3,347	($265)
1987	$3,367	$19.3
1988	$3,628	$1.7
1989	$2,935	($680)

*Parentheses indicate a loss

Source: Control Data Corp. CW Chart: Paul Mock

Amdahl whips latest release into Unix shape

BY JEAN S. BOZMAN
CW STAFF

SUNNYVALE, Calif. — Amdahl Corp. has brought UTS, its mainframe version of Unix, in line with prevailing Unix industry standards, industry analysts said. Release 2.1, announced in September, is compliant with Unix System V Version 3.1, and Release 2.0 will be phased out by October 1991, Amdahl said.

Analysts said they believe the change was prompted, in part, by a burgeoning market for Unix products in Europe and in the U.S. government. "The demand for mainframe Unix is coming from behind the [computer room's] glass wall," said Rikki Kirzner, senior analyst at Dataquest, Inc. in San Jose, Calif.

Acting as a corporate anchor for Unix applications, UTS will continue to run on IBM-compatible MVS and VM machines.

Using IBM's PR/SM or the older Amdahl Multiple Domain Facility (MDF), UTS sites can divide their IBM mainframe memory into multiple IBM-compatible or UTS/Unix-compatible regions. Worldwide, some 200 licenses have been sold in UTS' 10-year history, but Amdahl hopes to gain new sites with UTS Release 2.1, analysts said.

Major enhancements in UTS 2.1 include an increase in file size from 2G bytes to 6 terabytes, improved security features and an ability to share data with IBM's MVS and VM operating systems. "We've built a channel-to-channel connection to [IBM's] [Systems Network Architecture]," said Tom Littauer, manager of UTS product marketing. Sequential I/O rates have been boosted from a sustained rate of 300K byte/sec. to 1.7M byte/sec., Littauer said. Monthly license fees for UTS 2.1 range from $4,000 to $25,000, depending on the size of the mainframe that runs the software.

At the same time, Amdahl announced two new front-end processors, the 4655 Models 100 and 200, priced from $85,000 to $384,000, depending on configuration. The new processors are designed to collect data from Unix and X.25 networks for presentation to the mainframe UTS facility. As Robert Kidd, an analyst at Dataquest, explained, "The main point here is that the more homogeneous your network is from the start, the easier it will be to manage."

Apollo users push open Unix

BY J. A. SAVAGE
CW STAFF

SAN DIEGO — The biggest concern for users of Hewlett-Packard Co.'s Apollo workstation line is over the future of its Unix operating system, Domain OS, according to users who attended the Adus Apollo user group conference recently.

Since the merger of Apollo and HP in April 1989, users have been waiting and watching to see what will happen with HP's promise to merge its own version of Unix with Domain. Users lobbied Apollo to take Domain past HP's own HP-UX version of Unix and into the Open Software Foundation (OSF) standard, across the product line.

Before the conference, HP had said it would migrate Domain to OSF, but not across its entire workstation line. After hearing from its users, the company still would not commit to providing a new Unix-OSF kernel for all its computers.

"We don't have unlimited money to do all the options that [users] want," said Bill Kelly, manager of software marketing for Apollo. He said the company would add a layer of software on top of the old operating system instead of replacing it to bring it more closely toward open Unix.

HP representatives told the group that the company is attempting to put Domain OS functionality in its OSF version of Unix so that "Domain users will go there naturally," said Doug Eltoft, president of Adus.

However, they will have to cut over to OSF in the next few years, according to David Galbincea, senior consultant at Genicos Technologies in Medina, Ohio. "The next versions of Domain will incorporate the best of OSF as far as file systems," he said. In the mid-1990s, however, users will have to consider switching out of Domain to OSF, Galbincea said.

Apollo users were accustomed to "being taken care of" before Apollo was bought by HP in April 1989, Eltoft said.

At the conference, users were still grappling with the change. Eltoft added that there is a fine line for HP — either catering to its customers or competing in the marketplace.

"IBM plans obsolescence. Sun arbitrarily drops lines. Apollo users are used to running code, between the oldest machines and the newest," he said. "They're deluding themselves about the real world; it's very cutthroat."

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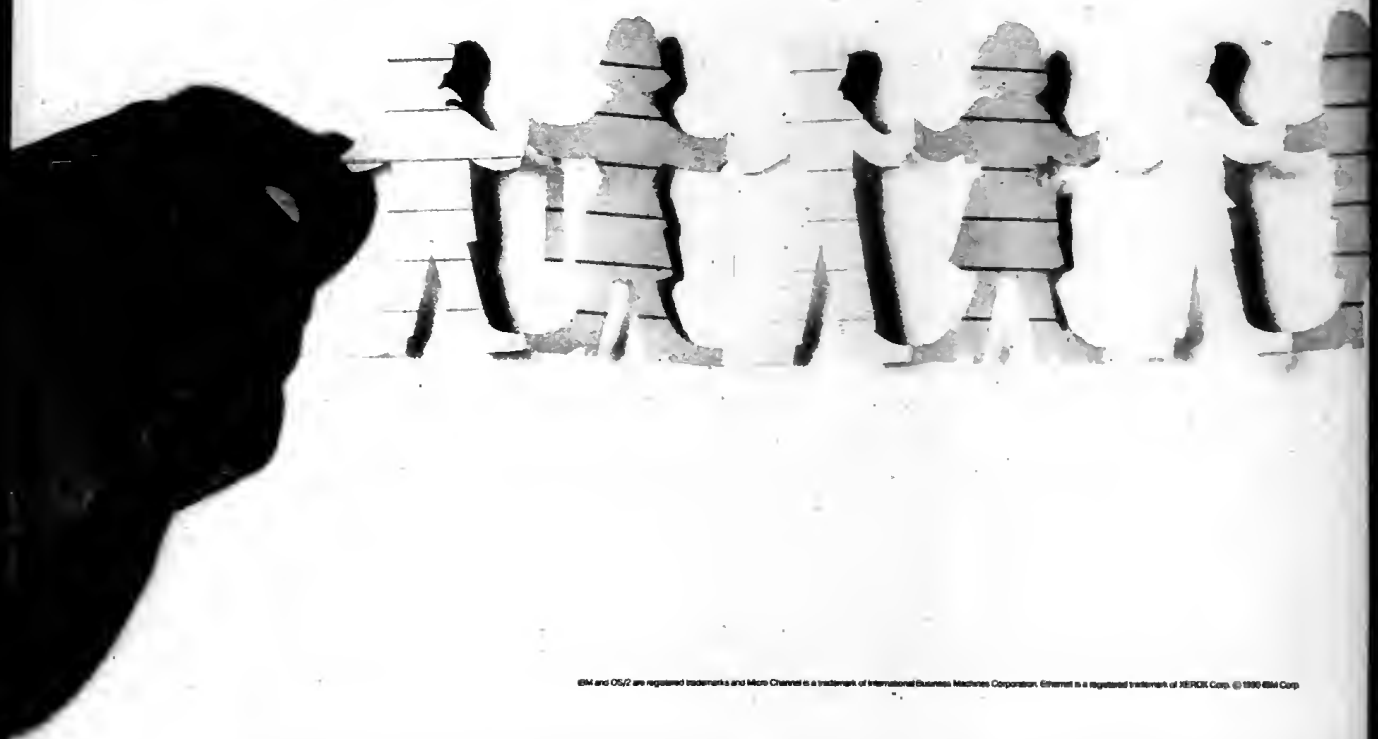

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Johnson

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total to 15 worldwide.

In addition, IBM's Worldwide Opportunity Council, a group of executives who scope out what customers are clamoring for, recently tagged GIS as one of the Top 20 applications to pursue in the '90s.

"I believe GIS is going to be a utility like word processing or spreadsheets," said Alison Libshitz, a manager at IBM's GIS Solutions Center in Houston.

An insurance firm might use a GIS to coordinate policyholder addresses with floodplain data, ensuring that flyers for flood insurance get to the right households. Hotels and department stores could use GIS information to pinpoint the most profitable locations for new branches or to sharpen an advertising campaign.

> IBM's WORLDWIDE Opportunity Council . . . recently tagged GIS as one of the Top 20 applications to pursue in the '90s.

"Call Before You Dig" systems from telephone companies often rely on a GIS to keep track of their cabling. Federal Express also uses a GIS to determine the best delivery routes.

Many major corporations are already converts, Montgomery noted. "Virtually every one of the Fortune 500 has a major project under way in GIS," said Montgomery, who is also president of Utility Graphics Consultants, the largest GIS consulting firm. "A lot of these projects start out in the engineering department, with MIS asked to assist, not to direct or lead."

The majority of Utility Graphics' clients consider their GIS databases as enterprisewide concerns, he added.

GIS enthusiasts like to compare the relative obscurity of their field today with the status held a decade ago by computer-aided design and engineering systems.

When industry analysts talk about the growth of the GIS business, they tend to burble a bit, using words like "explosive," "robust" and "phenomenal."

Worldwide sales of hardware, software and services from GIS vendors topped $612 million in 1989, growing a healthy 16% over the previous year, according to Daratech, a market research firm in Cambridge, Mass. Counting only software, GIS sales worldwide expanded by 45% from 1988 to 1989, hitting $223 million in revenue last year.

The first wave of GIS interest happened far from corporate boardrooms in local governments, utilities and state natural resource departments — Smokey Bear stuff, such as forest management.

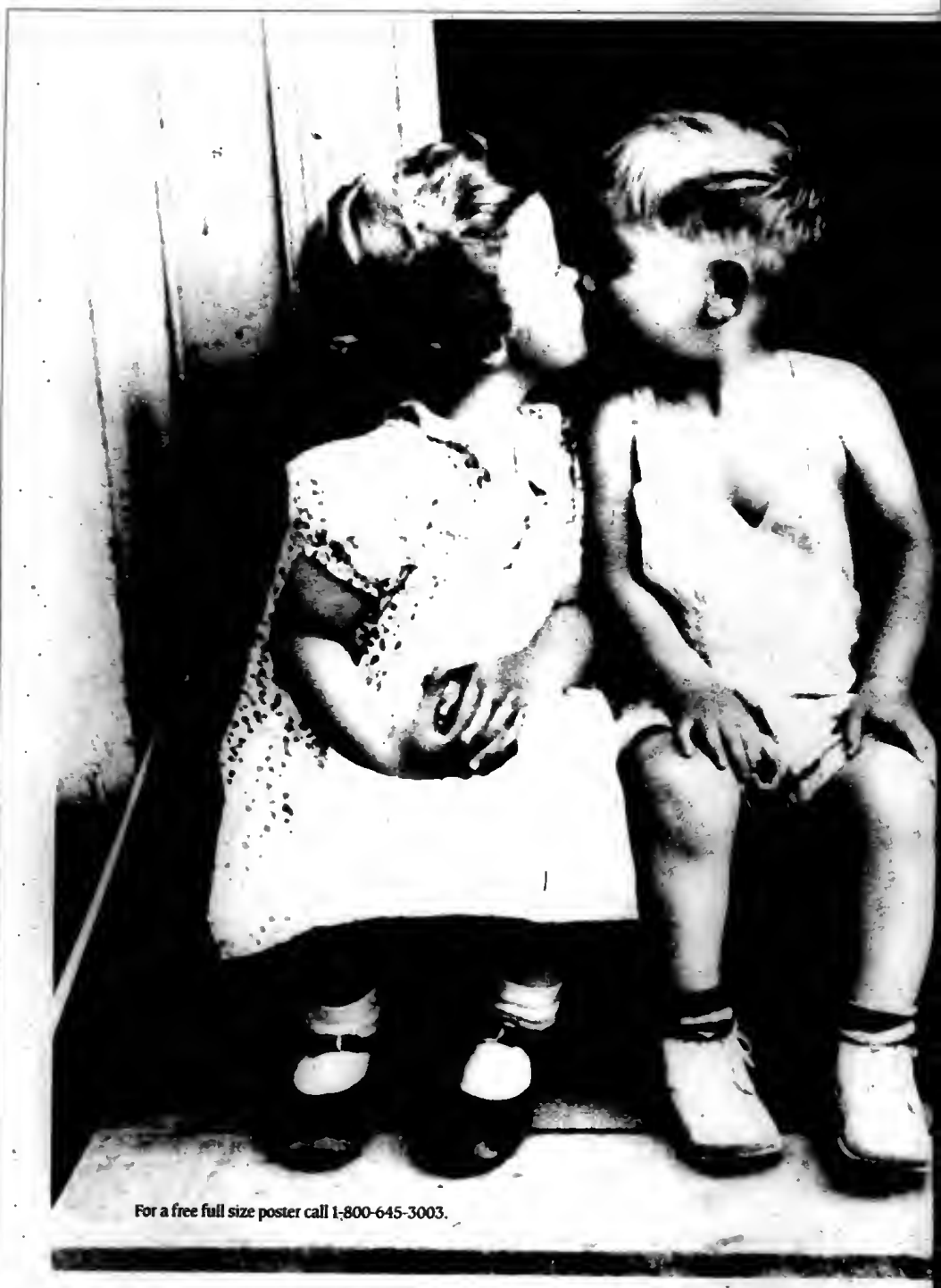
Then came the interest from the military and intelligence communities, the airlines and transporation companies as well as the mapmakers such as Rand McNally. Today, there are at least 120 hardware and software vendors servicing GIS, and another 350 data conversion companies turning paper files into digitized data.

The growth of GIS stems from several factors. Graphics workstations got better, more powerful and cheaper. Commercial and government-made databases of digitized geographic information became more accessible. Scanning technologies improved. Cities, counties and states began sharing their databases rather than reinventing a very expensive wheel.

The future holds some distinctly MIS-like challenges for GIS, however.

For one thing, there is a burgeoning need for standards. For another, the use of computer technology in capturing the data far exceeds traditional methods of managing it (sound familiar?), and businesses will want to incorporate other types of imagery — scanned drawings, photos or documents — into those geographical databases.

Johnson is a *Computerworld* senior editor, systems and software.



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TI sets its CASE sights on broad target

BY MARYFRAN JOHNSON
CW STAFF

Aiming beyond the Big Blue horizon, Texas Instruments, Inc. will move its premier computer-aided software engineering (CASE) tools outside the IBM mainframe environment and into multivendor corporate information systems shops.

Earlier this month, TI announced marketing and development agreements with Digital Equipment Corp. and Tandem Computers, Inc. that will bear fruit gradually, as TI's Information Engineering Facility (IEF) CASE tools are ported first to its own TI1500 Unix, DEC's VAX/VMS and Fujitsu's Unix.

The initial products are scheduled to be available in March 1991, and TI will announce prices in January.

"The idea is to develop an application using IEF on one platform and then send it to the target platform," said Mike Watters, vice-president of TI's advanced information management division.

The alliance with Tandem will eventually allow users to develop and run on-line transaction processing applications independent of a specific computer or operating system, said James Treybig, president of Tandem.

The IEF products for Tandem computers will roll out more slowly, however. The first phase, in late 1991, will require IBM's OS/2 and MVS operating systems. By 1992, users will be able to develop on OS/2 and Tandem Nonstop systems independent of MVS.

"It's not that TI is shifting focus. They're broadening focus," said John Dunkle, an analyst at Workgroup Technologies in Hampton, N.H. "They're clearly moving more into the midrange in recognition of the fact that as people move to distributed environments, the midrange becomes pivotal for applications development."

Lubrizol Corp. in Wickliffe, Ohio, has been a beta-test site for IEF running under VAX/VMS. The CASE tools were used to generate code on an OS/2 workstation, and the application now runs under both IBM MVS and VAX/VMS.

> "WHILE cross-platform technology like this is still quite immature, a lot of companies are beginning to examine it."
>
> FRANK MICHNOFF
> META GROUP, INC.

"The value of the product to us is its full life-cycle integration," said Georgio Sorani, MIS director at the chemical manufacturer. "We can take it from design to construction, and the integration really pays off."

Sorani said the applications under development at Lubrizol — in-house research systems — have been superior in quality to what IS could accomplish with a mixed bag of CASE tools or traditional third-generation languages.

"There were three things important to us: platform independence, fully integrated tools and the ability to do as much development as possible on intelligent workstations," Sorani said.

While TI has announced support for IBM's Systems Application Architecture strategy and AD/Cycle repository for CASE tools, analysts said this alliance with DEC and Tandem may enable all three companies to effectively compete with AD/Cycle.

"Users should be cautious in that TI will be marketing quite heavily before the products are actually available — like every company in this industry does," said Frank Michnoff, a research analyst at Meta Group, Inc. in Westport, Conn. "But while cross-platform technology like this is still quite immature, a lot of companies are beginning to examine it."

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A Comparison Chart of the Major Cooperative Processing Software Products:

FUNCTIONS:	SUPER-LINK®	Easel™	Mozart™	Arbor®	IBM's HLLAPI™	IBM'S APPC™
Processing Models Supported						
Peer-to-Peer Processing	✓			✓		✓
Existing terminal-based systems	✓	✓	✓		✓	
Mixed Peer-to-Peer and existing systems	✓					
Application integrity/Software Distribution	✓		✓			
SAA/CUA Interface compatibility	✓	✓	✓			
Workstation Environments Supported						
PC/DOS	✓	✓	✓	✓	✓	✓
OS/2	✓	✓	✓	✓	✓	✓
PC/DOS to OS/2 application compatibility	✓		?			
LAN Server for shared applications and data	✓		?			
Multiple transaction servers on a LAN	✓					
Development Environment Comparison						
Object orientation	✓	✓				
Dictionary and documentation	✓					
Panel/Form painter for creation/maintenance	✓	✓	✓			
3270 screen capture: picture and attributes	✓					
CASE/Application Generation	✓	✓				
Intelligent (language-sensitive) editor	✓					
System and user-defined reusable code templates	✓					
Integrated compile/test/debug	✓	✓				
Execution time source debugging	✓	✓				
All development tools for DOS available in DOS	✓		✓			
Objects Supported						
CUA display images	✓	✓				
CUA dialog within display object	✓					
Validation within display object	✓					
Help processing	✓					
Error processing	✓					
Text window interactions	✓	✓				
Business graphics	✓	✓				
3270 definition	✓					
Interactions with 3270	✓					
Interactions with Peer-to-Peer	✓					
"Logon" Scripts	✓					
Application integrity/Software Distribution	✓					
Local Data Access						
Indexed files	✓		✓			
dBase	✓		✓			
Flat Files (random access)	✓					
Flat Files (sequential access)	✓	✓	✓			
Multiple read/write to files on LAN Servers	✓					
High Level Functions Directly Available in the Language						
Field-level context sensitive help	✓		✓			
Optional user learning mode	✓					
Display and selection from:						
Indexed files	✓		✓			
Sequential files	✓	✓	✓			
In-memory lists	✓	✓	✓			
Menu display and selection	✓		✓			
Determining 3270 screen identification	✓		✓			
Read/write to 3270 in a single command	✓					
Read/write to 3270 one field at a time	✓	✓	✓			
Determine dynamic 3270 attribute changes	✓					
Embedded user assistance (pop-up selection lists)	✓					
Data editing/validation:						
Data type/mark checking	✓		✓			
Single range/limit check	✓		✓			
Field/data driven range/limit check	✓					
Date formatting/validation	✓		✓			
Validation against local and LAN files	✓					
Required fields	✓		✓			
"Must Fill" fields	✓					
Zero not valid fields	✓		✓			
Peer to Peer Host Environments Supported						
MVS-CICS	✓			✓		✓
MVS-IDMS/DC	✓					
MVS/TSO	✓					
DOS/VSE-CICS	✓			✓		
VM/CMS	✓			✓		✓
DEC VAX/VMS	✓					
Software Distribution Host Environments Supported						
MVS-CICS	✓		✓			
MVS-IDMS/DC	✓					
MVS/TSO	✓					
DOS/VSE-CICS	✓					
VM/CMS	✓					
DEC VAX/VMS	✓					

Every effort to present an accurate chart has been made, however no guarantee can be made (1/2/90). Super-Link® is a registered trademark of Multi Soft, Inc., Lawrenceville, NJ. Mozart™ is a trademark of Aspen Research. Easel™ is a trademark of Interactive Images, Inc. Arbor® is a registered trademark of Tangram Systems.

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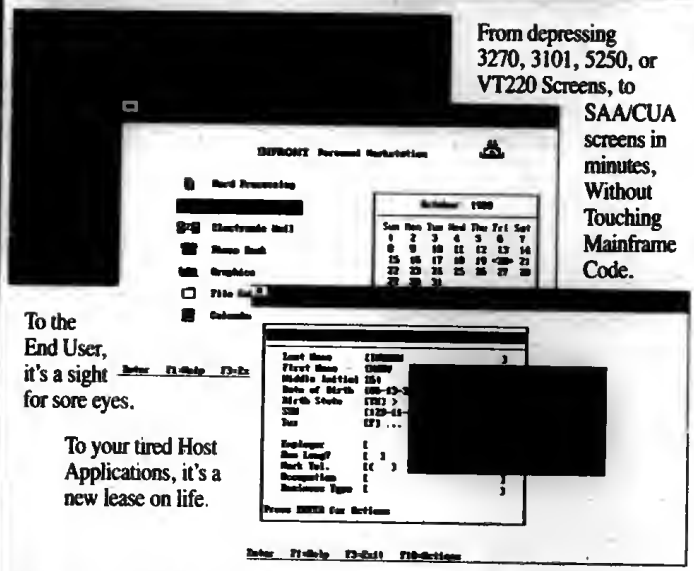

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NEW PRODUCTS — SOFTWARE

System software

Braintree Technology, Inc. has announced Version 1.8 of Auditor, a Digital Equipment Corp. VAX/VMS security investigator and auditing software package.

The product enables system managers to identify and correct security breaches in VMS systems. It can be used to review system authorization files and report on accounts that have gone unused for days, the vendor said.

Auditor Version 1.8 requires VMS Version 5 or higher and is available for free to current Auditor users. First CPU licenses range from $500 to $15,000, depending on CPU size.

Braintree Technology
600 Cordwainer Drive
Norwell, Mass. 02061
(617) 982-0200

Rocket Software, Inc. has announced the latest version of its resource monitor and administration facility, designed for IBM's Query Management Facility operating with IBM's DB2 database management system.

Rocket/QMF Version 1.1 can actively monitor QMF sessions and control resource usage according to parameters established by systems administrators. It also includes a scheduling facility that enables administrators to define specific resource limits for using QMF during peak and off-peak hours, the vendor said.

Pricing ranges from $8,700 to $13,600, depending on CPU size.

Rocket Software
161 Worcester Road
Framingham, Mass. 01701
(508) 875-4321

Database management systems

Programart has released Strobe DB2 Feature, an IBM DB2 application product designed to be used during all phases of an application's life cycle.

The product provides a full picture of a DB2 application's resource in an address space and identifies the Data Base Request modules and SQL statements that cause CPU consumption in DB2 service routines.

Pricing begins at $16,900. Current Strobe users can obtain the new release free.

Programart
1280 Massachusetts Ave.
Cambridge, Mass. 02138
(617) 661-3020

Cognos Corp. has announced that its Powerhouse Starbase relational database management system is now available for users of Hewlett-Packard Co.'s HP MPE/XL systems.

Starbase, part of the Cognos Powerhouse application development environment, provides a second-generation RDBMS for users of HP MPE/XL systems. It allows applictions developed for HP MPE/XL to operate immediately by sharing and accessing data in HP Turbo Image, KSAM or HP MPE files.

Pricing ranges from $15,000 to $100,000, depending on configuration.

Cognos
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Languages

Must Software International, a division of U3S International Ltd., has announced that its Nomad relational fourth-generation language is available for IBM's Enterprise System/9000 family of processors.

The product can be used with IBM's DB2 relational database for application development and reporting tasks. Its cooperative processing features allow users to split application functions among IBM mainframes, Digital Equipment Corp. VAX machines and IBM Personal Computers, the vendor said.

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COMMENTARY

Efrem G. Mallach

OS/2's gap? Salesmanship

The standard arguments for why OS/2 isn't selling usually focus on product issues. Maybe it doesn't offer any more than Windows 3.0. Maybe it's as complicated as Unix without the maturity. Maybe it's a poor copy of today's, or tomorrow's, Apple Macintosh.

Perhaps the real reason is how the product is sold. We can learn something about selling products from the acknowledged masters of the art — the automobile folks.

When Honda entered the U.S. luxury car market, it didn't let existing Honda dealers sell the new cars. Instead, it set up a totally separate network of Acura dealerships. Auto industry gurus predicted disaster. Today, Honda's move is recognized by many in the auto industry as a stroke of genius.

Separate distribution channels are necessary, as Honda recognized, because the selling process differs for different kinds of cars. The products may differ, but the way people buy them — and, consequently, the way the selling process must work — are quite different.

Today's desktop computer market suffers from the same myopia that auto experts once

Continued on page 52

Mainframe treatment for PCs

ANALYSIS

BY RICHARD PASTORE
CW STAFF

The trend to connect personal computer-based networks to mainframe-style peripherals has extended to centralized laser printers. Recent announcements from Eastman Kodak Co. and Xerox Corp. will give users of $2,000 PCs direct access to $250,000 printers. But while those high-speed machines seem ideal for megavolume jobs, some analysts say they may be overkill for the typical PC network.

Announced last month and available now, the $250,000 Adobe Systems, Inc. Postscript-compatible Kodak Lionheart system prints at 10 times the rate of the average desktop laser machine. It also offers finishing capabilities such as stapling and two-sided printing.

The system's intended host platforms are IBM, Apple Computer, Inc., Digital Equipment Corp. and Sun Microsystems, Inc. workstations linked by Ethernet, IBM's Token-Ring or Apple's Appletalk.

Kodak said it hopes to fill a need for centralized printing and act as a complement to distributed desktop printers.. While smaller printers will take care of short jobs or "proof" copies, Lionheart will best handle multiple copies of lengthy and high-volume documents, a spokesman said.

King of the desktop

Hewlett-Packard's Laserjet III, one of the most popular desktop laser printers, is a pussycat compared with Kodak's Lionheart

	Laserjet III	Lionheart
Print speed	8 page/min.	92 page/min.
Memory	1M byte	18M bytes
Number of bit-mapped fonts	14	200
Price	$2,395	$250,000

CW Chart: Marie Hanes

Earlier this month, Kodak's copier competitor, Xerox, announced the first in its own new series of printers, the Docutech Publishing Series [CW, Oct. 8]. Xerox said it plans for the $220,000, 136 page/min. printer to connect directly to networks by next year.

PC networks are increasingly connecting directly to centralized peripherals, such as system storage units, which were once exclusive to mainframes and minicomputers. Benefits include a tighter link between end user's software and the peripheral.

An intervening mainframe renders the PC software-to-central printer connection "tenuous at best," said Brandon Nordin, an analyst at BIS CAP International, Inc. With a direct connection, users will reap all the feature advantages of their soft-

Continued on page 53

Laptops make big splash in Japan

BY MICHAEL FITZGERALD
CW STAFF

The day of the desktop computer may be coming to an end, at least in Japan.

Japanese factories shipped more laptop computers than they did desktop personal computers between April and June, according to a report from the Japan Electronic Industry Development Association (JEIDA). Portables, which made up 51% of the market during the period, have never before outshipped desktop production in Japan.

A slight disclaimer, though: The figures included machines made for export. While JEIDA's figures showed that Japanese computer factories shipped 327,000 laptops, compared with 317,000 desktop machines, desktops outshipped portables in Japan itself by a margin of 268,000 to 216,000. Laptops thus held some 44% of the Japanese market.

Observers say that the fast-paced development of better, lighter portables as well as cultural concerns, such as desks that are two-thirds the size of American desks, make laptops a natural for both Japanese corporations and consumers.

Space is so tight in some Japanese corporations that workers joke that PCs should be called walkstations, not workstations, said Jack Plimpton, president of Japan Entry, a Boxford, Mass., firm that helps U.S. high-tech firms enter Japanese markets. Plimpton said that in many firms, PCs sit in a segregated area of the office, along with copiers and other large machines, rather than on employees' cramped desks.

Laptops also work well in the home market. Plimpton pointed out that portable word processors outsell laptops in Japan and said that he thinks that laptops and notebooks will begin to take a significant share of that market.

Pricing that is competitive with desktop machines and a kind of high-tech snobbery also contribute to higher sales, according to Bruce Stephen, an analyst at International Data Corp. in Framingham, Mass. Notebooks "are all the rage among young executives in Japan," Stephen said.

Most analysts expect that the U.S., with a PC market 10 times the size of Japan's, will continue to be a bastion of desktop sales. But even here, laptops will encroach on desktop market shares. Dataquest, Inc., a market research firm based in San Jose, Calif., projected that portables — mainly laptops and notebooks — will garner 40% of the U.S. market by 1993.

Analysts also report that U.S. portable makers have virtually no market presence in Japan and would need to significantly rework their machines to handle the Japanese language.

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Cooking with expert systems

ON SITE

BY MICHAEL FITZGERALD
CW STAFF

PARK CITY, Utah — "Good cookie!" is what you might say after biting into one of Mrs. Fields' offerings. "Smart cookie" might also apply, because Mrs. Fields Cookies, Inc. has used information technology since the day it baked its first batch 13 years ago and has developed a reputation for excellent use of innovative software.

Although its host systems have traditionally been from IBM, Mrs. Fields is no chip-off-the-old-block user of information technology. The company relies heavily on expert systems running under both the Application System/400 platform and DOS to manage its six-country chain of 650 company-owned stores.

Mrs. Fields uses two AS/400 Model 60s linked via token-ring and in-store, stand-alone personal computers largely based on the Intel Corp. 8088 chip. The stores are linked to the host by Xcellenet Corp. communications software.

This is a far cry from the early days at Mrs. Fields, when the company installed an ancestor of the facsimile machine called a Quim in its first few stores. Even then, information technology was used to meet the company motto: Retail happens daily. Data was sent back over the system each day and was then entered into a Radio Shack Corp. TRS-80 running Visicalc, the first spreadsheet.

Mrs. Fields' motto of retailing remains the starting point for developing computer systems.

"You need to build systems that report daily so you can really see what's going on and so that you can manage daily," said Paul Quinn, president of ROI, the Fields software group, which was recently organized as a separate affiliate by Mrs. Fields Cookies [CW, Sept. 17].

After the TRS-80s, Mrs. Fields bought an IBM Series/1, which offered a Touch-Tone data entry interface, so the stores could call in information via the telephone. But store managers found the system frustrating, because mistakes in data entry were difficult to correct.

So the company created an interface based around PCs, allowing store managers to see the data they entered on screen. Moving to PCs "was like opening floodgates," Quinn said, "because then the imagination went wild and said, 'What are all the other things we can do with that PC?' "

Quinn, who joined the company in 1984 and helped implement the PCs, then started to develop the company's first expert system to help solve its difficulty in effectively scheduling labor.

Mrs. Fields decided to build its own expert systems after examining and rejecting available commercial expert system shells. The decision has paid off as each of its five expert systems has paid for itself within six months.

The firm developed its own inference engine and its own knowledge base for the labor scheduling system and has installed it chainwide. Since it was fully implemented, the system has shaved 4% off company labor costs, adding the savings to its bottom line.

Waste not, want not

Mrs. Fields, like most fast-food chains, also faced production planning issues. Local managers had to have just enough cookies to meet demand with a minimum of waste. For this key function, the company had initially set broad production guidelines based on total store sales each day.

It decided to guide production for each store through a stand-alone PC-based expert system that has rules set up to gear production to each store's typical traffic flow. The system, also installed chainwide, has resulted in a savings of 6% of daily sales.

Another expert system is used to hire new store employees. The system develops a profile of each candidate, compares it with the desired employee profile and reports the results to the store manager.

The time benefits have been significant: Whereas month-end profit and loss analysis used to take two to three people at least two days, now only two hours are required.

The systems have given Mrs. Fields some unexpected benefits.

"Our training program changed radically after we put the expert systems in," Quinn said. "We weren't investing training dollars into managers on how to create a schedule and how to do a production plan, because they really didn't need to know. All they needed to know was push the button, and it's going to recommend something."

Mrs. Fields has realized significant cost savings from this, because the fast-food industry can generate employee turnover as high as 400% per year.

Another benefit surfaced when the company's controller left in June 1990. Thanks to one of the expert systems, much of his expertise stayed behind.

Despite kinks in Notes, most like what they see

BY PATRICIA KEEFE
CW STAFF

Lotus Development Corp.'s Notes groupware application has its problems, but it also holds a great deal of promise, according to users and analysts who have spent the last year intently studying the fledgling environment.

As observed last week [CW, Oct. 8], complaints about the way Notes is packaged — a flat entry price point of $62,500 for 200 nodes — has not dampened enthusiasm for the concept.

However, because even the most die-hard Notes fans have difficulty articulating exactly what Notes is — why it is more than just a bunch of office automation capabilities strung together and how it differs from integrated packages — it tends to fall into the "seeing-is-believing" category.

Recognizing that, Lotus has referred a host of users to Price Waterhouse, where they can see the application in action. Lotus is also hoping that partnerships with systems integrators specializing in vertical markets will provide users with further examples of how Notes can serve their organizations.

June Rokoff, vice-president of communications and the information services group, talks about getting clients to understand how they can interact with Notes and each other, be it in work groups, product development or in following an idea across the country.

Transformation tech

For example, she said, client applications can range from sharing corporate telephone books on-line to keeping track of events related to the company's business to on-line dialogues and conferences, which is how Chemical Bank uses it. Young & Rubicam, Inc., an advertising agency, uses Notes to manage client relationships, as does Price Waterhouse and the consulting services group at Lotus. Picking up on a theme brought forth by Price Waterhouse, Rokoff talks about "transformational technology."

"I see professionals throughout the company not tied to any location, in an electronic sense, [due to Notes]," said Brad Jackson, a senior consultant in Texaco, Inc.'s information technology department.

"Notes has the property that once you begin to use it, you begin to work in a very different way," said Frank Moss, vice-president of the consulting services group at Lotus. As an example, he cited his own use of Notes. Moss said he was accustomed to tracking projects using paper. But now that Lotus has all its projects on-line, Moss finds himself involved in fewer face-to-face meetings. "I make decisions now based on different information than I used to," he said.

Rokoff and Moss talk about Note's ability to change the way people work, a claim backed up by Notes users. As such, it is necessary to go out organizationally, Rokoff said, to make sure users see Notes and buy into it.

Once they do, according to Sheldon Laube, director of information technology at Price Waterhouse, they often need no prodding to move their group's applications onto Notes. In many cases at Laube's organization, users with limited technical skills have even begun to write applications for Notes. "It's incredible," he said.

David Marshak, an analyst at Patricia Seybold's Office Computing Group, agreed: "One of the things that excites those working with Notes is the ability to rapidly prototype applications; it's an easy platform to customize with." Among his clients, the applications being built on Notes tend to be those that deal with information essential to the client's line of business applications.

It is for these reasons that some observers said Lotus should concentrate on seeding any interested accounts with Notes rather than wrestling with users determined to pilot it.

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Postscript challenger fades

Microsoft's page description language not expected until mid-1991

BY JAMES DALY
CW STAFF

SAN JOSE, Calif. — The tornado that ripped through last year's Seybold Publishing Conference generated scarcely a breeze at this month's fete as Microsoft Corp. Chief Executive Officer Bill Gates conceded that his once-ballyhooed challenger to Adobe Systems, Inc.'s entrenched Postscript page description language could remain a paper tiger until the middle of next year.

Gates said that the first general availability of Microsoft's and Apple Computer, Inc.'s collaborative Trueimage page description language and Truetype font technology will come with shipments of OS/2, Windows and Apple's System 7.0 in the first half of 1991. Early OEM versions of Trueimage were delivered last week, he added.

Last September, Gates and Apple CEO John Sculley jointly announced that they were developing their own Postscript alternative, a move that stunned Apple's longtime partner Adobe. Apple was an early investor in Adobe and the biggest customer of Postscript, a popular application that is often credited with launching the desktop publishing explosion that in turn made a fortune for Apple.

Within hours of the announcement, a visibly angered Adobe CEO John Warnock parried the move, announcing that he would "open up" Postscript by publishing its technical specifications.

Warnock has fought hard to combat Gates' charge that Postscript has become outdated.

"There's a myth that standards and innovation are mutually exclusive, when often just the opposite is true," Warnock said during the four-day Seybold conference earlier this month.

Fire under Adobe

As a result, Mountain View, Calif.-based Adobe has moved fast to shore up the defenses of its cash cow. In June, the company held a developers' conference for Postscript Level 2, which is slated to be available in the first half of 1991.

Warnock said the new package will beef up text and graphics functions as well as adding data compression capabilities and an improved memory management device.

Observers said that Truetype and Trueimage will face a difficult battle for the hearts and dollars of users.

Jonathan Seybold, an analyst at Malibu, Calif.-based Seybold Seminars, said it is likely that users faced with competing products will stay with the old familiar offering. "Postscript is a central fact of life to many, many people, and it'll be very difficult to change that," he said.

Gates acknowledged that both Trueimage and Truetype may eventually garner only a small market share, but he said that "both are sure to keep the market competitive in areas of price."

In other show news, C-Cube Microsystems, Inc. unveiled a pair of image compression add-in boards for Apple's Macintosh and IBM's Personal Computer AT and compatibles.

The Compression Master and Compression Master PC take advantage of JPEG image compression technology, which compacts bulky image files so they can be more easily stored and moved. The products cost $995 each.

Quark, Inc. announced that it will target several future development efforts toward IBM's line of PCs and workstations. Its first entry into the market will be to adapt its Quarkxpress/PC electronic publishing software to the IBM Personal System/2. That package is expected next year.

In addition, Digital Equipment Corp. and Adobe announced that they will work together to develop a unified approach to editable document interchange. The companies' work will be based on DEC's NAS Compound Document Architecture and Adobe's Postscript.

Zenith Data hops on PC price-cutting bandwagon

BY MICHAEL FITZGERALD
CW STAFF

MT. PROSPECT, Ill. — Zenith Data Systems recently cut suggested retail prices across the board on its desktop personal computers. The announcement means that the company has cut prices on its entire line of PCs within the last month.

The cuts implemented earlier this month, although worldwide, do not affect pricing of PCs based on the Micro Channel Architecture sold by Zenith's parent, Groupe Bull, in European markets.

The latest reductions ranged from an $1,800, 13% cut in the price of the Z-386/33E Model 320 to a $100, 3.7% drop in price for the Z-286 LP Plus Model 40 (now $2,599).

Zenith saved its steepest reduction for its Z-386SX Model 1, dropping the price from $2,999 to $2,299, a 23.3% cut. It also lowered prices by 18.9% on its best-selling desktop machine, the Z-386SX Model 40, dropping the price of that machine to under $3,000.

Despite the latest pricing moves, Zenith's top-of-the-line, Intel Corp. 80386-based 33-MHz machines — the Z-386/33 E Models 150 and 320 — remained priced at more than $10,000, with the Model 150 priced at $10,599 and the Model 320 at $11,999.

A Zenith spokesman called the price cuts a "business decision" for Zenith. The reductions follow recent broad cuts by other PC makers, including Compaq Computer Corp.

"It sounds like they just brought their prices more into line with what the market is accepting as price points," commented Steve Hess, executive vice-president at Creative Strategies, Inc., a Santa Clara, Calif.-based market research company.

"You can speculate that they may be doing this in anticipation of a softer market, because Zenith could probably have justified keeping their prices where they were, but now they're at a competitive price point," Hess said.

Rookies gaining ground on PC software superstars

BY RICHARD PASTORE
CW STAFF

For years, the microcomputer software market has been dominated by just a few packages: Lotus Development Corp.'s 1-2-3, Wordperfect Corp.'s Wordperfect and Ashton-Tate Corp.'s Dbase. Though the market leaders are holding fast to their massive installed base, upstarts are beginning to gain significant ground, according to recent buying-pattern surveys.

Forward progress

Penetration of PC applications software packages into U.S. sites with 500 or more employees

Lotus' 1-2-3	80%
Wordperfect's Wordperfect	63%
SPC's Harvard Graphics	38%
Aldus' Pagemaker	36%
Microsoft's Windows	33%
Microsoft's Excel	26%
Microsoft's Word	26%
Autodesk's Autocad	26%
Wordstar's Wordstar	24%
IBM's Displaywrite	20%
Xerox's Ventura	19%
Lotus' Symphony	19%
Ashton-Tate's Multimate	16%
Lotus' Freelance+	15%
Borland's Quattro, Quattro Pro	12%

Source: Computer Intelligence
CW Chart: Marie Hansen

Wordperfect and 1-2-3 continued to lead the pack in sales at the 14,678 U.S. sites with 500 or more employees surveyed by Computer Intelligence in La Jolla, Calif. A key to their ongoing success is corporate buying inertia, said Dan Ness, personal computer analyst at Computer Intelligence. Cost factors associated with training, installation and support encourage the status quo and discourage software experimentation at larger firms, he added.

But two packages from Borland International are making sales strides, thanks to lowered defenses at Ashton-Tate and Lotus. Because both Lotus and Ashton-Tate have experienced major delays in releasing new products, Borland's Quattro Pro and Paradox have been able to slip in and make their presence felt, Ness said.

While 1-2-3's three-month average sales have tailed off by 5% since March, Quattro Pro has gained a couple of percentage points, according to surveyed firms. Paradox has doubled its 12-month average sales since June 1989, while Dbase IV has remained flat.

Also coming on like gangbusters is Microsoft Corp.'s Windows operating environment and Microsoft Word word processing package, which have gained five and six sales percentage points since March, respectively.

Coupled with Microsoft's Excel, the country's largest PC software house has logged a 12% gain in average sales from March through July, the survey showed. Analysts predicted continued growth for Microsoft, with sales in the $1.5 billion range next year.

Rounding out the list of the Top 15 hottest-selling software packages this summer in descending order were the following: Wordperfect; 1-2-3 Release 2.2; Microsoft Word; Quattro Pro; Excel; Software Publishing Corp.'s Harvard Graphics; Windows 3.0; 1-2-3 Release 3.0; Central Point Software, Inc.'s PC Tools; Ashton-Tate's Multimate, Dbase III and Dbase IV; Datastorm Technologies' Procomm; Symantec Corp.'s Q&A; and Fifth Generation Systems, Inc.'s Fastback.

COST FACTORS associated with training, installation and support encourage the status quo and discourage software experimentation at larger firms.

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Mallach

CONTINUED FROM PAGE 41

had. Microcomputer distribution channels evolved during the 1980s for a particular class of system having certain general characteristics and, therefore, certain appropriate selling processes. Those channels are no longer the only answer — or, for OS/2, even a correct one. OS/2 promoters are making a big mistake by trying to force the product through channels that were designed for something quite different.

Consider retail computer stores. Since they began, they have focused on relatively simple systems — typically, single-user systems designed to do one user-visible thing at a time. It doesn't take a great deal of time to demonstrate their value; hence, the selling process is relatively short, and competition is often based on price, with margins correspondingly low. Even direct sales to large corporate users follow this pattern.

Now enter OS/2, stage left, as the purported replacement for MS-DOS. It calls for more hardware, but that's a transitory problem, not a fundamental issue. Today's MS-DOS calls for far more hardware than CP/M did, but nobody complains. Ditto for a Mac with less than 1M byte being next to useless — and make that 2M bytes next year.

If people really wanted OS/2, they'd pay for the hardware. The key reason people aren't buying OS/2 is that existing desktop computer distribution channels can't sell it.

OS/2 is a fundamentally different beast from MS-DOS. OS/2 has all the modules, all the interfaces and all the complexity of VMS a few releases back. The only thing it does not have in common with the VMS of 1985 or so is a six- or seven-figure price tag for the hardware. That difference is not enough to change the nature of the selling process.

Also, the channels through which most desktop micros move have never succeeded in selling Unix-based systems or anything else of comparable software complexity. Hardware cost is not the reason. The same stores that can't move a $5,000 Unix box or OS/2 system routinely sell $10,000-plus Macintosh IICIs and IBM Personal System/2 Model 70s.

No, a key reason is their inability to deal with an extended sales cycle based largely on future potential. If I buy MS-DOS to run accounts receivable, I can see the relevance of every major MS-DOS feature to that accounts receivable job. If I look at OS/2, I am told, "You can run MS-DOS A/R now, and you'll get lots more good stuff later." What good stuff, and what will it do for me? "I don't know," the sales rep says, "and what's more, I don't care, and I'm not going to waste my valuable time trying to find out when I could be selling more MS-DOS systems."

This ability to sell future benefits — not benefits of future products, but future benefits of today's products — has been the large-system salesperson's stock-in-trade for years. IBM is known for conducting detailed studies of users' long-term needs. That's what it takes to sell complex systems, and that's what existing microcomputer distribution channels can't or won't do.

A look at the few folks who *are* buying OS/2 bears out the same lesson. As a group, they tend to be large organizations whose staffs have both technical and business savvy and whose planning horizon is longer than a year. If they see reasons to buy OS/2, there must be some pretty good ones. If other people don't see the same reasons, either their needs are consistently different — which is not plausible — or something is wrong with the way they are being approached.

Those who want OS/2 to take off must create sales channels that will enable it to do so. The sooner Microsoft and its colleagues learn the Acura lesson — assuming they really do want OS/2 to take off — the sooner they will get results.

Mallach is a faculty member at the University of Lowell in Lowell, Mass., and a consultant to users and vendors.

Computervision upgrades CADDS

BEDFORD, Mass. — Computervision, a Prime Computer, Inc. company, recently expanded its CADDS 4X mechanical computer-aided design and manufacturing (CAD/CAM) software line by unveiling a version of its CAD/CAM/CAE package designed to accelerate each phase of the engineering process — from functional design and design modeling through engineering analysis and documentation to manufacturing engineering.

Components offered in Release 6.0 reportedly include a solids editing tool to simplify the changing of solid models developed in CADDS 4X; an assembly design program to accelerate the design of large mechanical assemblies; thermal analysis software to aid engineers in assessing heat transfer problems; and easier machining of complex parts.

A CADDS Raster component is also available that allows users to view, edit and store raster-based images of their paper-based engineering documents in the CADDS environment. Pricing for the individual components ranges from $8,500 to $15,000, with the GCN solids editing tool provided to current Solidesign II users as part of the Release 6.0 upgrade.

SALLY CUSACK

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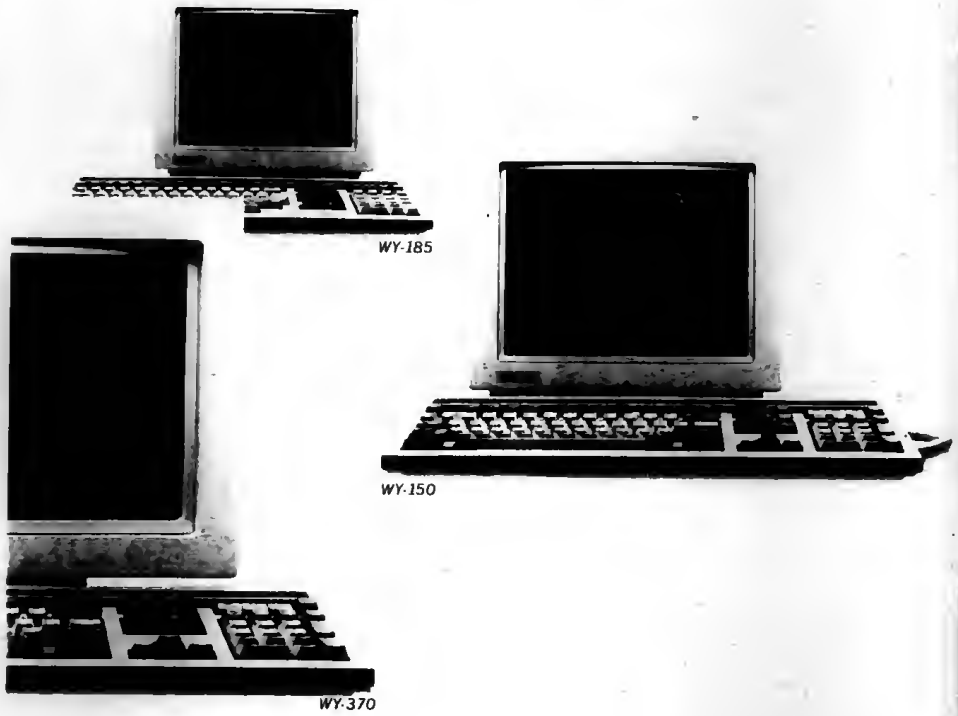

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DG plants feet firmly on I486 ground

BY SALLY CUSACK
CW STAFF

WESTBORO, Mass. — Data General Corp. officially stepped into the Intel Corp. I486-based ring this month, trumpeting a high-end, 25-MHz personal computer system.

"This is their opportunity to solidify themselves in the 486/Unix side of the server world," said Paul Zagaeski, a senior analyst at The Yankee Group. He estimated that 75% of all I486-based machines are purchased for use in a server capacity.

According to DG, the Dasher/486-25 is directed at sophisticated users looking for high performance and upward expansion options and provides a suitable platform for multiuser Unix applications and Novell, Inc. Netware networks.

The base system, priced at $7,995, provides 4M bytes of memory on a 32-bit controller, a dual-floppy disk controller, an IBM Personal Computer AT-compatible keyboard, a 16-bit Video Graphics Array controller card and eight expansion slots.

For memory above 16M bytes, another memory controller can be added to bring the total system memory up to 32M bytes. The system accommodates up to five half-height 5¼-in. drives, the firm said, which allows the user to combine multiple hard disks for fault-redundant Novell networking with tape backups and on-line storage of 1G byte.

The Dasher/486-25 is available immediately and includes a one-year warranty with a toll-free telephone support center, overnight express shipment of replacement parts and telephone or on-site assistance. The system ships with MS-DOS Version 4.01, QEMM-386 and menu-driven user diagnostics.

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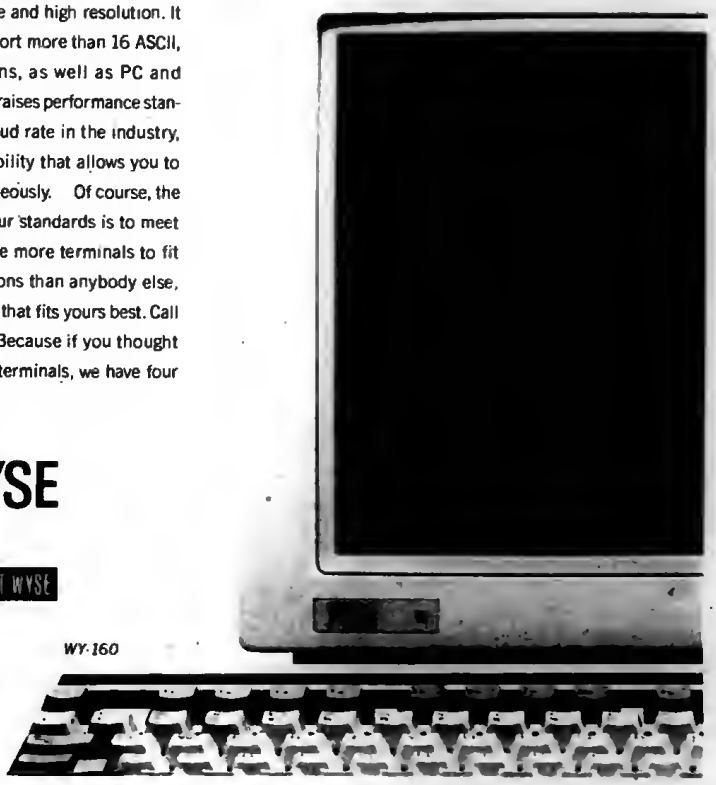

Mainframe

CONTINUED FROM PAGE 41

ware, including what-you-see-is-what-you-get capabilities, he said.

Other benefits include eliminating the need to translate software and reducing drain on the mainframe, analysts said.

Yet a trend toward distribution may hamper user acceptance of centralized printing. "Decentralization is what's happening with printers all over the place," said Michael Peterson, president of Peripheral Strategies in Santa Barbara, Calif. "The lower the cost goes, the sooner we're going to get to one per office."

A centralized printing source runs counter to users' desire for local control of their output, added Gabriel Kasperek, president of network consulting firm Kazcom, Inc. in Park Ridge, Ill. "The issue is who's going to gain power over it."

Similar concerns were voiced about who will manage the Xerox system. "If this [machine] is outside the purview of information systems, then who manages it?" asked John Dunkle, vice-president at Workgroup Technologies, Inc. "Especially given the networking and integration issues, that could be a problem."

The size and cost of such systems may also be out of whack for most PC network installations. "That's a lot to bite into for a typical company running LANs," Kasperek said.

Kodak said Lionheart would be economically sound for organizations with a printing need of 500,000 pages per month. The average desktop laser unit manages 1,000 to 2,000 pages per month.

"The markets where that [volume capacity] would be viable would be very selective," said John Hoper, president of printer consultancy Omnimark in Dallas.

Printing shops, publishing houses, insurance and brokerage firms and some banks may have the volumes to use such a system, Hoper said.

Senior West Coast Editor Jean Bozman contributed to this report.

MICRO BITS

Free 1-2-3 with Powermate PCs

Lotus Development Corp. and **NEC Technologies, Inc.** are offering a coupon until Dec. 31 for a free copy of Lotus' 1-2-3 Release 3.1 to buyers of NEC's 386SX, 386 and 486 Powermate personal computers. Purchasers also get a free copy of **Microsoft Corp.**'s Windows 3.0

Computerland Corp. has standardized on **Da Vinci**'s Da Vinci E-mail throughout its corporate offices and 750 outlets, after evaluating half a dozen other electronic mail packages. Da Vinci will replace a mainframe-based E-mail application.

The **U.S. Defense Electronics Supply Center** has awarded a $12.1 million contract for dual-drive compact disc/read-only memory units to **Sony Corporation of America.** The defense group will use the external drives in combination with IBM Personal Computer compatibles for office automation applications and to store and access parts catalogs and federal stock numbers.

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TONY LIMA
Author of "Inside dBASE IV," President, Pacific Systems Design Workshop Inc., San Carlos, CA:

"Version 1.1 should dominate the market. Its added features make it the best development environment available for PC database products ... None of the other products have the power and ease of the dBASE IV Control Center."

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RICHARD BRENNER
President, Westar Systems, Colorado Springs, CO:

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SAM GILL
President, DataWiz International, Foster City, CA:

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NEW PRODUCTS

Systems

Grid Systems Corp. has introduced an IBM Personal Computer-compatible laptop that features a built-in pointing device.

The Gridcase 1550-SX includes a proprietary pointing device in its battery-powered Gridcase that enables users to fully utilise the features of Microsoft Corp.'a Windows 3.0. A standard unit includes a 20-MHz Intel Corp. 80386SX processor, a 60M-byte hard disk drive and Windows 3.0.

A standard configuration costs $6,295, and a version with a 120M-byte hard drive is priced at $6,995.

Grid Systems
47211 Lakeview Blvd.
Fremont, Calif. 94538
(415) 656-4700

Samsung Information Systems America, Inc. has announced a portable computer that provides users with all the features of a desktop system.

The S3600 includes an Intel Corp. 80286 microprocessor, 1M byte of random-access memory and a 3½-in. 1.44M-byte floppy-disk drive.

A backlit Video Graphics Array screen yields 16 levels of gray at a 640- by 480-pixel resolution. Traveling Software, Inc.'a Laplink III software package is included free with the S3600 until Dec. 15, the vendor said.

The product is priced at $140.

Samsung
3655 N. First St.
San Jose, Calif. 95134
(800) 446-0262

Software applications packages

Macromind, Inc. has announced a software tool for integrating video with graphics, animation, text and sound when producing videotapes or video presentations on Apple Computer, Inc. Macintosh systems.

Macromind Mediamaker includes a print-to-tape feature that enables users to create videotapes for distributing their presentations. System requirements include a Macintosh Plus, II, SE, SE/30 or portable running Apple's System 6.05 or higher. A hard disk, 1M byte of memory (for black-and-white applications) and 7M bytes (for color applications) are also needed.

The product is scheduled to be released in the fourth quarter for $495.

Macromind
410 Townsend
San Francisco, Calif. 94107
(415) 442-0200

Prentice Hall Professional Software Corp. has introduced a knowledge-based personal computer financial analysis software product designed to help accounting firms analyze clients' financial and operating data.

Answers enables users to accept financial data from more than 70 different accounting packages, as well as from packages such as Lotus Development Corp.'a 1-2-3. System requirements include an IBM Personal Computer AT, Personal System/2 or compatible equipped with 640K bytes of memory and DOS Version 3.0 or higher. It is priced at $595 for a single-user version and $1,495 for unlimited use at one location.

Prentice Hall
2400 Lake Park Drive
Atlanta, Ga. 30339
(404) 432-1996

Training

Strategic Management Group, Inc. has announced an interactive self-study program designed to help users understand financial terminology, financial reports, profitability and other financial training applications.

The product combines a four-part workbook, case studies, exercise review questions and a computer-based business simulation. It runs on an IBM Personal Computer AT or XT, Personal System/2 or compatible and requires PC-DOS Version 2.0 or higher, 512K bytes of random-access memory, two disk drives or a hard drive.

The product is available for $300, the vendor said.

SMG
3624 Market St.
University Science Center
Philadelphia, Pa. 19104
(215) 387-4000

Board-level devices

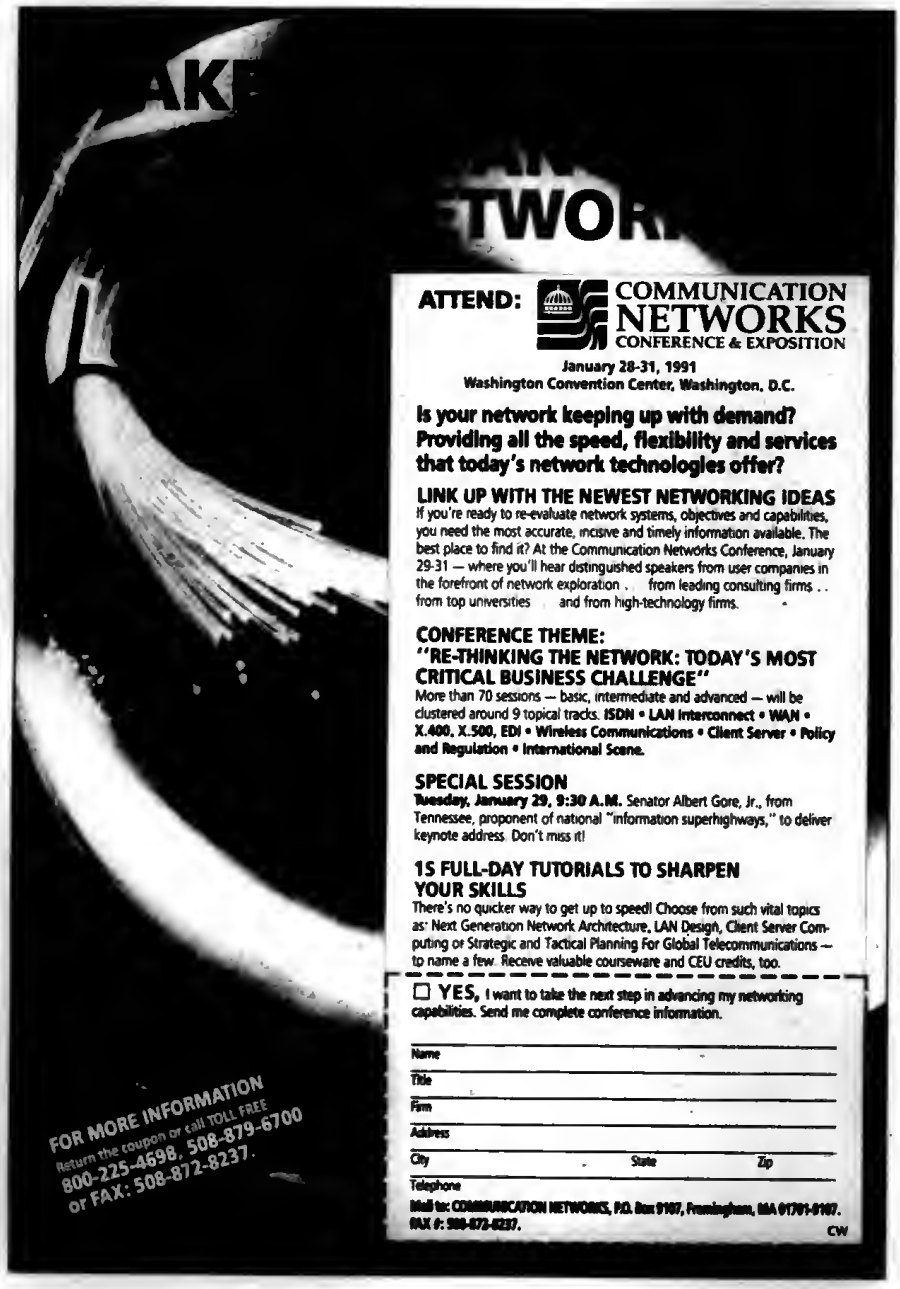
Ariel Corp. has announced two digital signal processing coprocessor cards designed for Sun Microsystems, Inc.'s Sparcstation 1+, Sparcstation IPC and Sbus-compatible computers.

The S-56 and S-56X single-slot Sbus boards are based on the Motorola, Inc. DSP56001 chip and are reported to operate at 13.5 million instructions per second.

The cards also feature up to 192K bytes of zero-wait-state memory and a digital signal processing port with a maximum synchronous transfer rate of 6.75M bit/sec., the vendor said.

The S-56 and the S-56X boards are priced at $2,495 and $2,995, respectively.

Ariel
433 River Road
Highland Park, N.J. 08904
(201) 249-2900



IDC WHITE PAPER

The Pick System Environment

EXECUTIVE SUMMARY

In this day of hostile takeovers and faceless corporations, it is refreshing to come upon a privately held company still based on the vision of its founder. Indeed, 25 years after he converted his dream to reality, Dick Pick remains the guiding light behind Pick Systems. A lot of promising companies have come and gone in that time, but Pick persists.

Not only does the company persist, but it prospers. Building upon its innovation of the early days, the Pick environment has expanded to embrace today's technology. No longer just an operating system, Pick has reached out to the information systems world by developing a relational database management system. This has made it a player in the UNIX and MS-DOS worlds.

Ease of access and use distinguish the Pick environment. The way various levels are presented lends itself to a logical understanding by users, allowing them to navigate through these levels without the aid of programmers. This ability to view data without concern for how the database management system software has to handle fields, records, files and strings makes Pick a powerful query and information retrieval model. Advanced Pick enhances ease of access and use by making it even easier for end users to browse through data.

Despite its innovative past and aggressive plans for the future, Pick is still competing in a hostile world. The Pick environment has a host of strengths to see it through. Its original design, the single vision of Dick Pick and its application base of over 3,000 products place it in a strong competitive position. However, Pick must contend with threats such as its limited marketing, hostile advances from larger database companies and the possibility, however remote, of an outside acquisition.

If the company parrys these threats, IDC believes it is poised to thrive in the '90s.

THE PICK SYSTEM ENVIRONMENT

AN IDC WHITE PAPER FOR INFORMATION SYSTEMS MANAGEMENT

THE HISTORY OF PICK

The Six Goals of Pick

KEY SUCCESSES IN THE PICK DESIGN

The Pick Data Model
The Correlative Concept
The Data Dictionary
The Pick File System

THE PICK FILE SYSTEM

The System Level
The Account Level
The Dictionary Level
The Data File Level

THE PICK ENVIRONMENT TODAY

Movement to Industry-Standard Operating Systems
Pick and MS-DOS
Adding DBMS and Applications to the Operating System Mix
Advanced Pick

PICK IN THE '90s

PICK WEAKNESSES

PICK OPPORTUNITIES

THREATS TO PICK

PICK STRENGTHS

SUMMARY

PICK

THERE ARE PRODUCTS THAT ARE CONSIDERED CLASSICS DUE TO AGELESS DESIGN AND CONTINUING FUNCTION. WORDSTAR, 1-2-3 AND THE VAX ARE AMONG THEM. WITH SUCH PRODUCTS, THE PASSAGE OF TIME ONLY SERVES TO REINFORCE THE CORRECTNESS OF THE EARLY VISION, THE UTILITY OF THE INITIAL DESIGN. THE PICK SYSTEM BELONGS ON THIS LOFTY LIST OF INFORMATION INDUSTRY CLASSICS. ■ ALTHOUGH IT HAS DEVELOPED INTO AN APPLICATIONS-BASED DATABASE MANAGEMENT SYSTEM (DBMS), PICK WAS THE FIRST OPEN OPERATING SYSTEM FOR GENERAL BUSINESS USAGE. IT TOOK A DIFFERENT TACK FROM ITS CONTEMPORARY COMPETITOR, UNIX. PICK WAS ORIGINALLY ORIENTED TOWARD BUSINESS APPLICATIONS WHEREAS UNIX WAS USED FOR SOFTWARE DEVELOPMENT. ■ IN ITS INITIAL IMPLEMENTATIONS, THE PICK ENVIRONMENT WAS DEVELOPED ON

minicomputer-level products for small–and medium-sized businesses. It was first implemented on Microdata systems, but moved to a large number of additional platforms in the late '70s.

The key to its design was the multi-user BASIC environment with its reporting capability and query access. These traits allowed the casual business user, who was not a computer professional but needed information, to run his business. This orientation toward the information content in the data files was a unique feature to Pick in its early days.

If you are talking about Pick Systems–the name of the company –you have to talk about Dick Pick himself. Although Dick Pick and Don Nelson were instrumental in the early design of the system, Dick Pick provided the single vision and driving force behind the Pick environment. His single-minded focus enabled Pick to weather many storms and changing trends in the industry.

Pick has endured because concepts thought of as leading edge in the '90s were implemented by Pick in the '70s. Features such as information access, global data dictionaries, end-user programming and application portability are not news to Pick users, who have enjoyed them for 20 years.

This IDC White Paper provides the reader with a clear statement of the genesis, current capabilities and outlook for the Pick environment. Although some that are short-sighted might dismiss Pick from their plans, the utility and function of this open computing environment demand more than cursory examination.

THE HISTORY OF PICK

The factors that influenced the development of the Pick system are not in the same mold as those that shaped

1965 Dick Pick and Don Nelson start work on GIRLS for TRW.

1969 Pick and Nelson deliver their software to the Army.

1972 Pick incorporates Richard Pick & Associates.

1973 First commercial introduction of Pick occurs on Microdata 1600.

1976 Dick Pick splits with Microdata.

1977 Ultimate Corp. becomes second licensee.

1981 Pick system implemented on IBM Series/1.

1984 Pick system released for IBM PC XT.

1985 Pick system released for IBM PC AT.

1988 One millionth Pick user, and implementation for IBM RT PC.

1989 Pick announces availability of Pick data base for UNIX.

1990 Pick ships Advanced Pick on AT&T UNIX, IBM AIX and SCO/UNIX platforms.

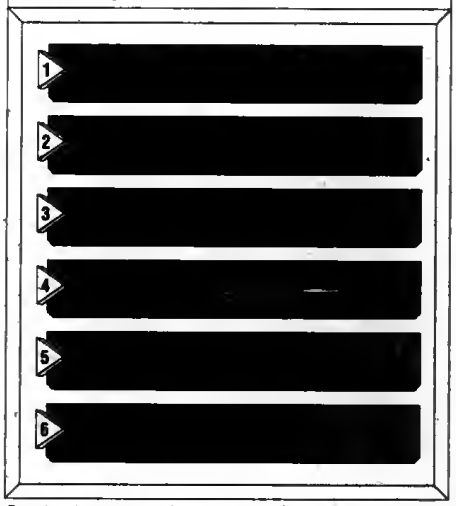
Pick's distinction as an industry classic dates back to its 1965 origins.

thousands of other engineering projects As we shall see, the Pick System is an outgrowth of business requirements, not technology problems

The precursor to this unique environment was described uniquely by the U S Army in 1965, as the "Generalized Information Retrieval Language and System," or GIRLS for short The name was subsequently changed to "General Information Management." Used as an information retrieval tool, its first business application was tracking parts for the Army's Cheyenne helicopter project. At this point, its name was changed again to Integrated Technical Data System (ITDS).

After the completion of this project, Dick Pick continued to refine the concepts found in ITDS and explore the possibilities for its use in the commercial processing environment. As a result of this 1972 work, in 1973, the environment was ported to the Microdata 1600 processor with limited success, as the 1600 achieved only a 7% market share in the small computer market.

The six goals of Pick



Based on the realization of these goals the Pick environment was a forerunner of systems to follow it by 20 years

The Six Goals of Pick

Given the successes with the Army, and the burgeoning market at the time for minicomputer products, Dick Pick founded Pick and Associates in 1972 The new company's immediate goal was to continue development on the Microdata 800 that was originally started on its predecessor, the Microdata 1600

The new company had six primary goals:

- Provide a highly productive development environment
- Provide a highly productive end-user environment
- Reduce keystrokes for non-expert computer users
- Simplify the organization of the data
- Use minimal system resources
- Provide hardware portability

Although IDC readily admits that advances in processor and system technology have enhanced the ability of vendors in general to deliver performance, it is the fulfillment of these underlying six points that makes for the timelessness of the Pick design and its appeal to users.

Between 1973 and 1977, when the Microdata systems were achieving their limited success in the market, Microdata had what amounted to a monopoly on Pick However, in 1977 there was a falling out between the two, which became an opportunity for Pick to support other systems

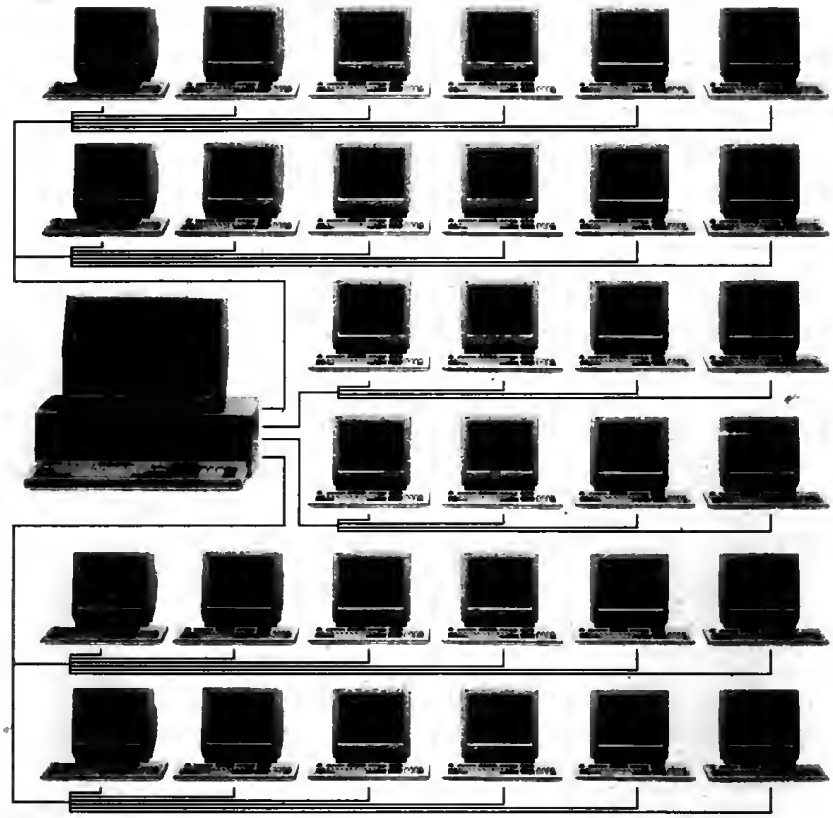
During 1978 and 1979, new licensees such as Intertechnique, Ultimate Corp and ADDS paid fees reported to be over $1 million for their ports. However, the distinction of the first port went to the Honeywell Level 6 minicomputer, which, achieved this milestone in the form of a product made by its licensee, Ultimate. Porting efforts really heated up in 1981 and 1982 when the IBM Series/1 and 43XX, and models from Pertec, SMI and Altos were all added to the base of Pick-capable systems.

Despite Pick's limited success at the time, clones were springing up In 1977, a company called Devcom started developing a product that eventually became the Prime Computer, Inc "Information" series. In 1982, the Pick-based Revelation system from Cosmos came to market for MS-DOS and the MS-DOS-oriented retail market. Finally, in 1985 VMark Software developed a Pick derivative to run under UNIX. All of these products had some incompatibilities with Pick, but all embodied the same heritage of usability, information access and efficiency

Currently, sales of hardware using the Pick environment approaches $2 billion a year and there are three million users, all of whom are taking advantage of one of the most consistently useful environments for users with business problems.

KEY SUCCESSES IN THE PICK DESIGN

Calling Pick a classic in an industry where there are so few implies the company has realized some incredibly



How To Keep Your PC Working After Thirtysomething.

Try connecting more than 30 busy PC users on a LAN and you'll turn grey before your time. Even your thirtysomething operators will start sprouting a few grey hairs before they're able to get any real work done.

Put them on a Pick System and they'll be up and running in no time at all. As many as 33 users sharing a common database application and accomplishing multiple tasks with the trouble-free ease, power and speed only a true multiuser relational database system can deliver.

You don't even need PC's. A single PC/386 will drive 32 low-cost terminals (or PC's for that matter) just fine. With much faster speed and response time than other comparable multiuser database management systems. And Pick is specifically designed as a multiuser business applications system that is easy to use, update and modify as your business needs grow.

No matter how many users you need, the Pick System grows with you. The same Pick application can run on most major computer hardware ranging from PC's, to mid-range minicomputers, RISC-based systems and fault-tolerant mainframes.

There's no other relational database system more cost-effective and efficient for developing, maintaining and supporting multiuser applications. Call Pick Systems for the story the LAN people won't tell you until you turn grey before your time.

PICK PC SYSTEMS

Pick Systems, 1691 Browning, Irvine, CA 92714 (714) 261-7425

Pick System is a registered trademark of Pick Systems Inc.

prescient design achievements. From IDC's perspective, the four most important of these are:

- The Pick data model
- The correlative database
- The data dictionary concept
- The Pick file system

Each of these building blocks is critical to the timeless viability of the Pick design. They enable Pick users to have capabilities today that the trade press "predicts" will be on the horizon tomorrow. They all underlie Pick's philosophy that the goal of the information system is to readily provide information. It is clear that the Pick environment was designed with that as its highest priority.

The Data Model

The Pick data model is one of the most elegant characteristics of the entire design. As is evident from the Pick data model chart, it is designed to avoid the issue of the single purpose "fields and values" that is common in so many other products. Within a Pick file there are items, values and attributes. The beauty of the system lies in the fact that values can be items, and attributes can also be files. This leads to a truly relational environment where the view of the information can be tilted to whatever axis of entry specific users may have.

In addition, the presentation of the information is done in a layered fashion allowing users to see levels of information. As can be seen from the Pick layering effect chart, in this environment, a query can start at one level and then proceed through the data to greater levels of specificity. As the chart shows, the presentation of the information lends itself to a logical understanding by users of the relationships as they navigate through the data. This is done based on their own logic, not a programmer's.

This ability to go up and down through the base of information without worrying about how the DBMS software has to handle fields, records, files and strings constitutes a powerful query and information retrieval model. This is the basis of the "correlative" concept. IDC has found that this concept's flexibility in letting users structure what they perceive to be elemental relationships is very beneficial and productive.

The Correlative Database

This second design aspect is best described by a term that is unique to the Pick environment, correlative. It describes a fundamentally different approach to applications and queries from that taken by relational systems, and has significant merit. The correlative is essentially a comprehensive way to report on information in the database without the need for understanding specific relationships and dependencies of data. This is accomplished via the rules and paradigms that are inherent in the master data dictionary of all Pick systems.

An additional difference between the relational and correlative query is the bidirectional capability that is found in the Pick correlatives. In the majority of competing databases the relationships and queries are typically handled in a unidirectional fashion. While it is possible to have two distinct pieces of data, fields or records relate in two directions, this is typically accomplished via a circular logic route, not a single path with two directions.

Pick's ability to do this transparently not only simplifies the process for users, it results in better efficiency. This capa-

What started out as a trickle with the first commercial port to Microdata in 1973 snowballed by the end of the decade. Now, Pick has established a working relationship with both AT&T and IBM through the formation of Pick subsidiaries, PickTel and PickBlue.

bility makes the correlative an extremely powerful vehicle for query and report generation.

As will be evident in the next section, the presence of the master dictionary and its rule set mitigates the "correct-query-syntax/incorrect-results" phenomenon that occurs in other environments.

The Data Dictionary

One of the vogue concepts among the information system cognoscenti is "global data dictionary". It describes an environment where all information contained within a given system is listed, along with necessary conditions, in a master data dictionary. Many large IBM users pursue the realization of this concept today as if it were the Holy Grail.

Here again is where the initial GIRLS specification, which provided the foundation of the data dictionary, proves its timelessness. In this dictionary, every file and attribute is recorded along with key relative information.

Invoked upon logon, the data dictionary allows Pick reports and queries to be organized simply. The availability and location of information is made comprehensible to users who are no longer required to become experts in data structures.

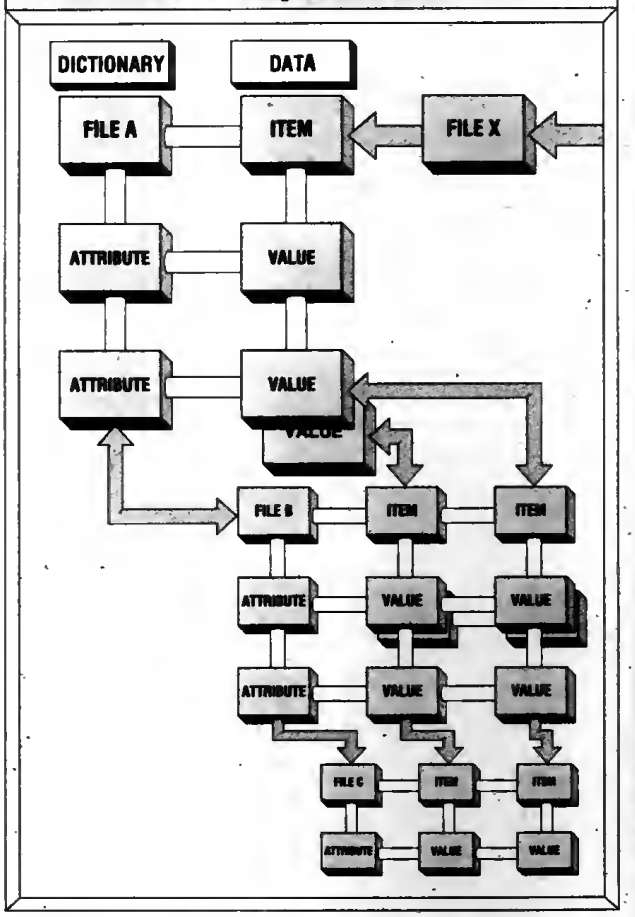
The ability to move beyond the issue of finding information and into using it is essential not only to Pick users. For instance, one of the key tenets of IBM's Systems Application Architecture strategy is the eventual development of a comprehensive data dictionary. It will be a triumph for IBM if it can replicate the ease of use achieved by Pick.

In the design of the Pick file system, the dictionary is the interface between the user and the data files. This relationship manifests itself in the processing speed and organization found in Pick application systems.

THE PICK FILE SYSTEM

The Pick DBMS is comprised of four key elements: The system level, the account level, the dictionary level and the data file level. A discussion of each follows.

The Pick Data Model - simplified view



The beauty of the Pick Data Model lies in its relational characteristics which provide users with a flexible view of data

The System Level

The system level handles many of the system's administrative duties. Every time there is an end-user request, it is called to determine if the inquiry is valid in light of the privileges allowed to that account. The system level operates in conjunction with the next level, the account level.

The Account Level

The account level's main function is to record and provide to the system level the details about each valid user account. The information maintained includes file restrictions, allowed access methods, security information and the number or type of commands that are permitted by that particular user account. The centralization of these tasks and their inherent function within the overall system increase the ease of security and account/user control.

The Dictionary Level

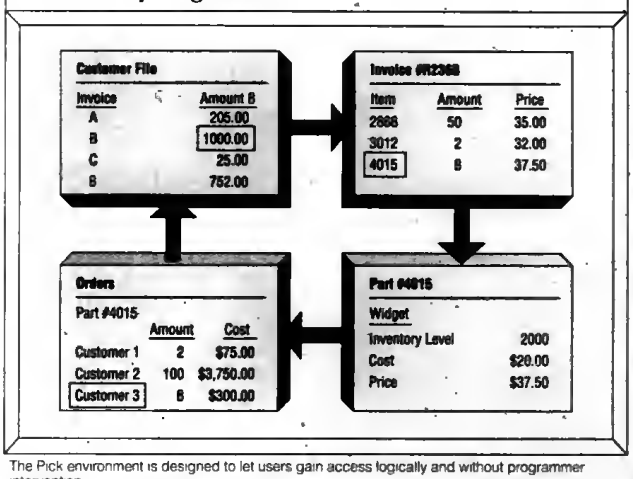
The dictionary level is described thoroughly in the preceding section. It is important to remember that this level is the actual point at which the user interfaces with the system.

The Data File Level

The data file level in the Pick environment is not notably different from many other DBMS systems in which files comprise the lowest level.

It is significant that within this four-part structure there is a dependent relationship between the four elements. This integration simplifies system use. There is, however, one caveat to consider. Pick does not presently allow for the substitution of third-party products to replace any of the four levels described here. This can be a problem for users who wish to use a PC front end or a different query tool.

The Pick layering effect



The Pick environment is designed to let users gain access logically and without programmer intervention

THE PICK ENVIRONMENT TODAY

As would be expected from any 25-year-old product, there have been a number of changes to the initial Pick implementation. These key changes are:

- The movement to industry-standard operating systems, especially UNIX and MD-DOS
- Pick's movement away from being an operating system vendor to becoming a DBMS and applications supplier
- Advanced Pick and the introduction of system-wide automatic, ad hoc updating.

Movement to Industry-Standard Operating Systems

For years, the press and analysts chronicled the competition between Pick and UNIX as warfare. In that war, the goal was to conquer the minicomputer market. Pick was armed with its applications and commercial appeal, while UNIX fired back with its availability and the C language. Now the battles are largely over and the two combatants are realizing a peace dividend in the postwar years. Some Pick licensees will continue to use the entire Pick operating system and database, but it is no longer necessary.

This is because the Pick database and its applications are now portable to UNIX and other industry-standard operating systems. While UNIX integration is the primary thrust today, IDC believes MS-DOS and OS/2 will also be targeted.

Implementing Pick on UNIX is a straightforward procedure. Seemlessly combined, they are two highly complementary products, with each having strengths that counter the other's weaknesses. Most notably, Pick has a strong application base and is easy to use, while UNIX has strong communi-

cation capabilities and development tools.

Pick's application base of over 3,000 products is composed of both vertical-industry and generic offerings, with vertical-industry comprising the vast majority. On the vertical-industry side, there are products such as ACT II, a mail-order house software product from Rigden, Inc., Cacos, a cargo control system from CRS Systems and Distributors INFO FLO, a wholesale distribution package from Interactive, Inc.

Generic products include CompuSheet+, a spreadsheet product from Via Systems, Inc., The Works, a word processing program from Jet Software, Inc. and Accu/Plot II, a graphics product from AccuSoft Enterprises.

The Pick File System

The Pick file system appears to be hierarchical, but the Pick dictionaries (data which describes data or meta data) make it global

Pick and MS-DOS

The benefits to MS-DOS can be be extensive for smaller companies or workgroups that want more function than they can get from today's rudimentary DOS software, but lack the financial resources to acquire that function.

The Pick DBMS combined with MS-DOS on PCs provides a migration path for many smaller firms or workgroups in larger companies that are at the difficult stage of outgrowing their current PC systems.

Adding DBMS and Applications to the Operating Systems Mix

The biggest misconception regarding Pick is that it is only an operating system. Even though this statement was valid in the past, it is no longer true as Pick moves into the '90s.

Just as it is a misconception to think of Pick as only an operating system, it is an underestimation to ignore Pick as the foundation for its 3,000-plus database applications that are built, debugged, tested and maintained.

Database technology is not new to Pick. The initial goal of the product design was to build the "Data Management System." However, the technology of the time required that an operating system component also be built in order to deliver a fully functioning system.

Times have changed dramatically. The effects of integrating Pick with industry-standard operating systems like UNIX, MS-DOS and OS/2 eliminate many objections to Pick as a database, and elevate the Pick environment to a more competitive position. Of course UNIX and MS-DOS have also benefited from their newfound Pick compatibility.

IDC believes that many new customers will be attracted to Pick's appealing database and application features. Large companies may spearhead this movement. One of their biggest challenges is providing server-level implementations of data sets for ad hoc query and reporting functions. While UNIX is clearly becoming more capable in that area, its coupling with a truly end-user-oriented tool such as the Pick DBMS will solve many application problems that would otherwise go unresolved.

Advanced Pick

The ongoing development of Pick has lead to a number of enhanced versions. Despite this evolution, however, the environment's first monumental change is embodied in Advanced Pick. This change can be divided into three areas:

- Improvements in the actual system
- Improvements for programmers and developers
- Improvements for end users.

The improvements in Advanced Pick at the system level include transaction logging, secondary indexing and B-Tree capabilities. The goal in these changes is to add features for some of the more demanding environments, as well as to improve Pick performance in on-line transaction processing applications.

Improvements for programmers come primarily in the form of tools to improve the efficiency of the development effort and to reduce program code size. The most important of these, in IDC's opinion, is the ability to update data across the critical master dictionary without programming. Another important advance is the inclusion of an input/output processor to eliminate the need to write long system function calls.

For end users, the benefits are most easily seen in the browsing of data:

Advanced Pick allows users to step or browse through data via whatever route strikes their fancy. In addition, font and proportional spacing support have been added, allowing Pick systems to incorporate some of the desktop processing features desirable to end users.

PICK IN THE '90S

Calling Pick an industry classic is eminently justifiable. But how long can it maintain this lofty status in an industry that thrives on change? IDC believes there will be an increasingly important role for Pick. Some database technologists may disagree, but the need for information access and usability by the more than 50 million regular computer users in the U.S. is a strong force.

In order to fairly consider how Pick Systems and the Pick environment might look five or six years from now, IDC believes that a "Weaknesses, Opportunities, Threats and Strengths Analysis" is in order.

PICK WEAKNESSES

The weaknesses of the Pick environment fall into two disparate categories: the inherent weaknesses of the system and the lack of publicity leading to misconceptions about the company. They are by no means fatal; in fact, the Pick environment could continue successfully and even grow in it's present state. Nonetheless, there are these problems to consider:

Lack of Fortune 1000 Impact

The Pick environment has been a success in the small-business segment of the market that, unfortunately, draws little attention. Despite the size, growth and utility of small-business solutions, they are generally ignored by many high-powered movers and shakers. Pick has to improve its image and impact in larger sites. One way to do this is by aligning itself with UNIX.

Lack of Communication Capabilities

The issue that was not foreseen in the initial design of Pick was communication. Pick is inherently a standalone system. The addition of UNIX partially mitigates this problem, but how Pick will integrate into a truly distributed DBMS environment is still a looming question. Again, its newfound affiliation with UNIX may help.

Limited Programming Tools

Despite the large amount of function provided in the Pick development environment today, there is still room for more. With the rest of the world moving toward C, Pick must add to its own Basic programming language offering. Also, there may be some issues at the graphic user interface (GUI) level. Pick does presently support GUI, but the inclusion of Native X or Windows/PM calls might be required in the future. The addition of Advanced Program-to-Program Capabilities would help.

Poor Performance in Floating Point

While it is certainly no secret that the Pick environment was designed to deal with textual or string-related business data processing, the pressure for expanded quantitative, computational facilities is being felt. IDC's user surveys have found that the performance issue is not going away. The pressure may get turned up even more by the

UNIX/Pick strengths and weaknesses

Pick	Strengths	Weaknesses
	Application base	Communications
	Ease of use	Programming tools
	Stability	Trained developers: numbers
	Single vision	Floating Point
	Data dictionary	Fortune 1000 penetration

UNIX	Strengths	Weaknesses
	Development tools	Ease of use
	Communications	Application base
	Technical/Floating Point	Version warfare
	GUIs	Multiple visions
	Horizontal applications	Vertical business applications

Once rivals; UNIX and Pick now complement each other, a development that bodes well for Pick's commercial fortunes

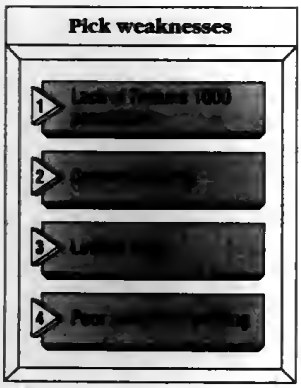
inclusion of more complex budget and numerical calculations as new business applications strain the present Pick system.

PICK OPPORTUNITIES

The movement to UNIX and the break with some of the historical emphasis on Pick being only an operating system have positioned Pick in a strong marketing position. While the firm is not cultivating "unplowed fields" untrodden by the competition, IDC believes there are still substantial opportunities. They include:

Small Business Upgrades

Although the small business segment of the market has its drawbacks, it also has its advantages. The trade press and analysts may think there is no market outside the Fortune 1000, but IDC has found that the small business market is comparable in size to its Fortune 1000 counterpart. IDC estimates that as many as 750,000 of these small establishments are outgrowing their standalone PC systems. Pick is very well positioned to make major sales gains in this segment.



While Pick's lack of visibility among Fortune 1000 companies is countered by a strong presence among smaller firms, its lack of communication capabilities makes it reliant on systems such as UNIX and MS-DOS

The UNIX Business Database

Although there are a number of UNIX database products that are selling very well, all of them tend to be high-end products with limited application catalogs. The Pick system is a very different product from those of Oracle, Ingres, or Informix. For those customers who are more business- than technology-oriented, Pick is likely to have a strong appeal.

PickBlue and PickTel

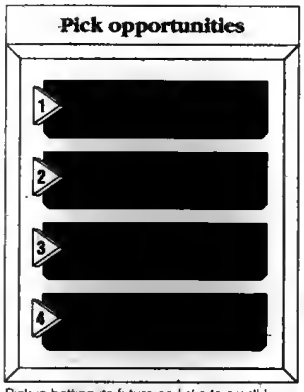
These two Pick subsidiaries are charged, respectively, with optimizing Pick's presence with IBM and AT&T. These alliances are structured in a manner to more effectively generate business than engineering exchanges. The IBM RS 6000 implementation, in particular, appears to give Pick a broad market, with little in the way of established competition.

Increasing Customer Attention to Information Access

The Pick environment clearly provides access to information contained in the database with minimal programming and maximum organization. Microsoft's big thrust, its "Information at your fingertips" concept, is similar. As actual applications that require user access to information grow, Pick has a large opportunity to play an important role.

THREATS TO PICK

As with any other player in the information industry, Pick is subject to menace from within and without. The threats it should be most immediately concerned with include:



Pick is betting its future on links to small businesses, UNIX, IBM, AT&T, and the need for user-friendly information access

Limited Marketing

In an industry where making the loudest possible noise has become a key selling requirement, Pick clearly is not shouting. It does not help that the word "Pick" does not show up in many of the licensees' marketing materials. The decision by more aggressive companies to bury Pick under a ton of marketing fodder is clearly a concern. Pick must respond by aggressively promoting its existence and its quality. This means spending money.

Slow UNIX Acceptance

Pick's increasing reliance on the UNIX connection closely ties its fortunes to those of UNIX. If UNIX stumbles in its march toward universal acceptance, Pick will also feel the pain. IDC expects that Pick license sales will continue to grow based on Pick as a standalone entity, but the largest long-term growth will come if UNIX succeeds. What can Pick do to help ensure that success? Unfortunately, very little. However, it has

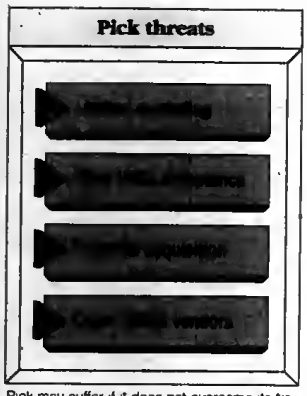
joined UNIX International and that can only help.

Acquisition of Pick

With revenues of around $25 million annually,the privately-held Pick is not attractive to would-be suitors based on its financial prospects However, if the company were bought – and it is definitely not for sale – the delicate formula that has guided it since its inception could be irretrievably altered for the worse. Of course, a well-managed acquisition could also be a great benefit

The Large Database Suppliers

Clearly companies such as Oracle, Microsoft, Sybase, Ashton-Tate and even IBM have not yet considered Pick a threat to their sales or market share If there were a change of mind and some of these powerful DBMS vendors attacked Pick in the marketplace, Pick could have serious problems—problems it has never before faced. It would be in a stronger position to ward off the behemoths if it increases its revenues



Pick may suffer if it does not overcome its traditional disdain for self promotion An acquisition could also change the company for the worse, as could increased competition from the large DBMS vendors

PICK STRENGTHS

There are many things that are right with Pick, or the environment would not have grown and prospered for so long These strengths are the key to continued future growth

The Pick Design

The fundamental design, specified 25 years ago, is as appropriate today as it was in 1965 The concepts of information access and data dictionaries are the building blocks that other systems are just now trying to add

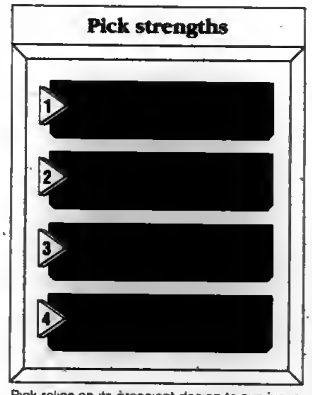
Single Vision

Time after time, IDC has seen that the most effective, efficient and timely designs are controlled and managed by either a single individual or a very small group. In the Pick case, it is accurate to say Advanced Pick represents 25 years of vision by Dick Pick. Because of his stewardship, the company maintains a clear goal and a definite direction. All these pieces add up to a competitive advantage

System Efficiency

Somehow, the incredible efficiency of the Pick environment seems to be ignored With OS/2 requiring 4M bytes of memory per user, Windows needing 2M bytes and Apple's Multifinder also consuming 2M bytes, it is amazing to see this elegant multi-user system supporting 65 on-line users with only 16M bytes. For smaller environments, Pick can run up to 10 users on a 640K byte, 286-based machine.

While little is made of the fact that Pick will run under configurations not seen since the late '70s, IDC believes customers who prefer to buy less hardware will be attracted to the Pick solution.



Pick relies on its prescient design to survive in today's competitive information industry environment

Application Base

Even though many of the Pick applications are vertically oriented for smaller firms, there are others that are universally useful. It is important to realize most of these applications have been around long enough to be fully tested and debugged. IDC believes this is the kind of mature technology that users feel most comfortable with.

SUMMARY

In summary, the Pick environment is one of a handful of products that can be considered a classic in its design. Due to its many strengths, it is better positioned today than ever before. It is especially well positioned to take advantage of UNIX and other non-proprietary systems

The fact that Pick is end-user oriented, and is designed to solve information needs outside the realm of programmers is its strongest edge. As the industry has become computer-rich and information-poor, the need for the Pick environment has grown exponentially.

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COMMENTARY

Norman Weizer

Waiting time for wireless

These days, it seems that every time we turn around, we hear or read something about a new wireless data communications technology that will revolutionize the world. Inside of a building, outside of a building, these new technologies are growing like crazy. It'a easy to feel like we're missing a good bet if we don't jump right onto the bandwagon and get some form of wireless technology installed in our data networks.

But are we really missing a bet? What does this technology really bring to the party that good old copper wire, or good new optical fiber, doesn't provide? Let's sit back and take a hard look at some of these new technologies.

We have had wireless data communications systems for many years. Paging networks, two-way radio networks and special mobile radio networks are familiar (even too familiar) to many of us. These networks have been used for alerting, dispatching and status monitoring applications.

The networks are good for these applications but generally too costly and too slow to be practical for casual use by portable workstation users who need to pass significant amounts of information between their workstation and home base.

Continued on page 75

Options cloud cabling picture

ANALYSIS

BY JOANIE M. WEXLER
CW STAFF

In the "old" days of local-area networking, corporate cabling decisions were pretty straightforward. If you ran Ethernet, you installed coaxial cable. If you ran token-ring, you installed shielded twisted-pair. That is what the standards dictated.

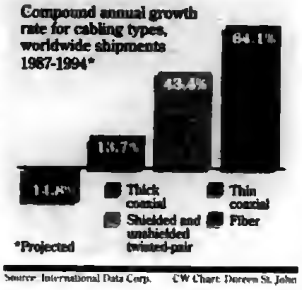
But now that savvy engineers have figured out how to make LANs operate reliably over a variety of media, vendor companies have presented users with a double-edged sword: a broader array of networking choices accompanied by the onus of new decision-making dilemmas.

"Many of our big clients are coming to us confused about whether they should pull fiber, twisted-pair or coax," remarked Todd Dagres, director of communications at The Yankee Group, a research and consulting firm in Boston. "It's an important decision, because when you consider per-user computing costs, cabling is right up there. And you can easily make a choice that is good for the short term but cramps your style later."

Cabling alternatives are running amok. Late last month, the 10Base-T standard that allows 10M bit/sec. Ethernet LANs to operate over unshielded twisted-pair was formally ratified. 10Base-T is unseating new installations of both thin coaxial cable and the more cumbersome thick coaxial cable — other standard media for Ethernet — as a cost-effective option (see chart).

Oh, what a tangled web . . .

The use of fiber-optic cabling is expected to show strong growth, while the demand for thick coaxial goes into the red



Source: International Data Corp. CW Chart: Doreen St. John

In the token-ring arena, it was only a year ago that Proteon, Inc. introduced a technology for running 16M bit/sec. LANs over unshielded twisted-pair wiring — a feat token-ring pioneer IBM insisted could not be done because of reliability problems with the medium.

FDDI lightning

Today, not only are there 16M bit/sec. token-rings cruising along over telephone wire, but there are also efforts under way for running the comparatively lightning-fast 100M bit/sec. speeds of Fiber Distributed Data Interface (FDDI) — which specifies glass fiber-optic cable — over the medium, as well as for running the high data rates over plastic fiber. Plastic fiber is a less expensive alternative to glass but poses some distance limitations and can lose transmitting power as it ages.

The controversial 100M bit/sec. media proposals will be presented this week at the American National Standards Institute FDDI committee meeting in Fort Lauderdale, Fla. Some industry pundits argue that FDDI alternatives can bring better performance to users less expensively. Others counter that there are too many trade-offs in using the substitute media and that implementing even more standards will fractionalize FDDI volume and keep prices elevated.

One user interested in high speeds over copper is Ray Parcell, computer systems specialist at the Naval Mine Warfare Engineering Activity in Yorktown,

Continued on page 78

Pitney-Bowes scores $30M pact with Ardis

BY MICHAEL FITZGERALD
CW STAFF

Pitney-Bowes, Inc. has agreed to a $30 million, five-year contract with Ardis, the IBM-Motorola, Inc. radio network joint venture.

Under the terms of the deal, Pitney-Bowes will outfit its field engineers with Ardis machines. Ardis will provide equipment, systems integration and communications software. The contract was approved by Pitney-Bowes' board of directors but has not been signed because the two companies are working out the final details, according to a source close to the negotiations.

The contract, which is a "fait accompli," according to Alan Reiter, executive editor of the "Mobile Data Report" in Washington, D.C., will be the largest confirmed contract Ardis has achieved other than its role as provider of systems to IBM.

United Parcel Service is the only other confirmed client of the joint venture, although several companies are developing or testing the Ardis system. In May, UPS signed an agreement to use Ardis technology, but UPS views Ardis as an interim solution while it develops its own 220-MHz network based on proprietary customized machines.

Pitney-Bowes systems officials did not return calls regarding the project, but there will be a representative speaking on Ardis technology at the Wireless Computing Conference on Oct. 28. Ardis officials had no comment on the deal.

Joseph Baylock, an analyst at Gartner Group, Inc. in Stamford, Conn., said the Pitney-Bowes contract would help validate the Ardis concept of radio-controlled communications technology.

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SPF/2 is compatible with OS/2 Standard and Extended Editions, Versions 1.2 or later. However, Standard Edition users will not have access to macro capabilities due to the unavailability of REXX in that environment.

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Netware users fight printer problems

BY JIM NASH
CW STAFF

For some information systems managers, Novell, Inc.'s print service has offered only three options: go slow, disappear and crash.

Several users of Novell's print service software who gathered at last month's Networld '90 show griped about a variety of problems with the print applications. The leader of a large Novell users group said he knows of "three or four" IS departments waiting for Novell to solve a number of print server problems.

The print server software sells as a Netware-loadable module (NLM) on a file server, as a Netware 286 value-added process application and as an executable application to create a dedicated DOS print server.

John Riffle, technical service representative for Martin Marietta's Information Systems Division in Orlando, Fla., said the NLM print service has proved unreliable in tandem with remote Digital Equipment Corp. postscript serial printers.

Riffle is one of several users complaining that the network print software has not been thoroughly tested. He said Martin Marietta's printing trouble began last February when he upgraded some Netware 386 packages from Version 3.0 to Version 3.1, which contained Version 1.0 of the NLM print services.

"We tried to bring up 16 postscript serial printers attached to different personal computers using Novell's remote print Netware-loadable module [Version 1.0], but the printers were getting knocked completely off-line."

Although he has yet to determine if it is related, Riffle said there have also been instances when rebooting a local PC attached to a printer has caused the file server to crash.

Martin Marietta technician Jim Pelletier said printing jobs queued on a local printer are sometimes deleted when another job is sent from the local PC.

"There are at least two other sites at Martin Marietta" having similar headaches, Riffle said. Users report no problems if printers are hung off a file server or if parallel Hewlett-Packard Co. printers are substituted for the serial printers, he said.

Other users had almost the opposite experience. Users at Lockheed Corp. subsidiary Lockheed Sanders, Inc. in Nashua, N.H., reported that the print service on Version 3.0 was "pretty unstable," according to Lockheed Sanders networking strategist Glenn Fund. Fund said the print service periodically would run very slowly or lock up file servers. His answer was to upgrade, and he said the network has yet to lock up since installing Netware Version 3.1.

Riffle's first attempted solution to the printing problems was a full retreat. He said he tried to downgrade to Version 3.0 but found that Version 3.1 overwrites the previous operating system, stranding him at Version 3.1. The predicament was partially solved only when he ran Novell's print service as an executable program on a dedicated print server.

A Novell spokesman acknowledged "some problems" with Version 1.0 of the NLM print service occurring a year ago but attributed them to configuration mistakes by users. The Provo, Utah-based company also acknowledged errors with its Pserver value-added process application, which caused system crashes in Netware Version 2.15C. Novell has recommended that users reconfigure the value-added process as an executable file.

Version 1.2 of the print service, which is currently available, addresses NLM problems, according to the spokesman. Pelletier said he disagrees. He said he talked with Novell technicians and was told that they had never tested NLM print services with DEC's LN03 postscript serial printer.

"We were told by Novell engineers that the printer problem is one of their top 10 problems to solve," he said.

NEW DEALS

GEIS inks banking pact

General Electric Information Services said that Chemical Bank in New York has purchased its BPS*Central System, a mainframe software system that reportedly will allow the bank to process electronic payments for clients who are implementing electronic data interchange with their trading partners.

GTE Spacenet Corp. has inked a $5.7 million contract with Silo, Inc., a consumer electronics retailer, for a nationwide data communications network consisting of very small-aperture terminals installed at Silo's 215 stores. The vendor will also reportedly provide operations and maintenance support.

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Weizer

CONTINUED FROM PAGE 73

However, a new breed of networks target the above type of communication, including the IBM-Motorola Ardis and the Mobitex network from RAM Mobile Data, Inc.

In addition, cellular telephone networks are increasingly carrying facsimile and data communications. Motorola is even proposing a new data network that will be supported by a fleet of satellites for around-the-world coverage.

Companies are already bringing out such devices as battery-powered fax models, which can operate in an automobile, and battery-powered mobile modems that are designed to work with cellular networks.

The cellular networks bring flexibility in the connection of portable PCs and fax machines to corporate computing resources. A cellular phone system allows you to drive your car and communicate using your PC and your fax machine at the same time.

The new data networks such as Ardis and the Mobitex network promise reliable data communications even when the terminal is in a relatively well-shielded building.

They also feature a nationwide computer communications network that allows them to deliver information to a terminal in just about any major population center in the U.S.

All of this sounds great. The vendors are predicting markets for this type of mobile data system in the range of $1 billion to $2 billion dollars per year during the next three to five years. Almost daily, equipment suppliers are bringing out new mobile faxes and special modems that can operate over mobile networks.

But is there a fly in this mobile ointment? Actually, there are two flies. They are called the speed (bandwidth) fly and the standards fly, and they sometimes cooperate to muck up the works.

Mobile telephone and radio communications are more difficult than plain old telephone service communications, in which a signal doesn't fade like a mobile signal can. Telephone systems don't have to handle instantaneous handoff of signals from one transmitter to another like a mobile system does. Mobile systems also have their own methods of multiplexing and compressing signals.

What does that mean to you? First you can't just take my old modem, tie it to a battery and expect to use it in a mobile application. It takes a special modem using a special protocol. Plus, you need another identical modem at the fixed end of the wire to undo what the special mobile modem did.

Now standards get into the act. No one has developed a standard for this special protocol. Therefore, all of the interested modem manufacturers are going their own way, and nobody understands anybody else.

And, just to make life interesting, the cellular network operators are in the process of switching from analog to digital networks to fit more users into the system. For reasons that are too esoteric to go into here, the new digital networks will be less adapted to data communications than the current analog networks are.

The new digital communications networks like Ardis and Mobitex don't run into the standards problem; they control their own standards.

However, they run into speed problems. Our communications experts say that the maximum effective throughput on these networks is only about 600 bit/sec. once error correction and overhead bits have been taken care of. That's only one quarter of what your 2,400 bit/sec. modem can provide and one-sixteenth of what your fax can do when it's going full tilt.

So what do you do? I suggest that unless you have some real business needs, which you can justify on a hard-dollar payback basis, sit on the sidelines and watch the fun for a while. The problems will be ironed out eventually. In the meantime, the donnybrook will be fun to watch.

Weizer is a senior consultant at Arthur D. Little, Inc. in Cambridge, Mass.

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GLOBAL BITS

Networking East Germany

General Electric Information Services (GEIS) has installed a network node in East Berlin and plans to install network nodes in three other cities in Eastern Germany before the end of 1990. The nodes will allow users to gain access to GEIS' value-added network services, such as eletronic mail and electronic data interchange, via a local telephone call.

Newbridge Networks, Inc. has completed the installation of an international network for **Towers, Perrin, Forster & Crosby, Inc.** The network supports communications among the New York-based international consulting firm's remote branches and from overseas sites to the corporate data center in Philadelphia.

Sprint International has signed an agreement with **CPRM**, the international telecommunications operating entity in Portugal, to explore joint provision of services between Portugal, North and South America and Africa. The two firms will also discuss installing a trans-Atlantic fiber-optic submarine cable.

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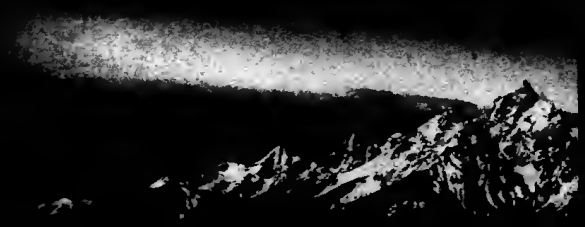

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CW10/A

E-mail spurs new privacy debate

BY JIM NASH
CW STAFF

Information systems managers have found themselves in the middle of a renewed debate: Do employees have any right to privacy at their desks?

Increasingly, network administrators must help corporations ride the fence between legitimate employee oversight and intimidating scrutiny. Whereas in the past, companies argued desk and telephone privacy rights, the new focus is on electronic mail.

"It's ludicrous to separate E-mail [privacy] from the desk and the file cabinets," said Mike Cavanagh, executive director of the Electronic Mail Association in Arlington, Va. It is the same issue, Cavanagh said, just updated.

In the glare of a class-action lawsuit filed this summer against Epson America, Inc. alleging wholesale interception of employees' E-mail, companies are taking a new look at privacy. Resulting draft policies highlight ambivalent feelings about workplace privacy.

The Epson case illustrates how differently management and labor view privacy. Alana Shoars, former E-mail coordinator at the Torrance, Calif.-based company, has alleged that her supervisor was printing reams of E-mail without employees' knowledge. Shoars has charged that she was fired Jan. 25 for questioning the appropriateness of E-mail taps. She is part of the class-action suit.

A spokesman for Epson has said that the firm dismissed Shoars for "gross misconduct and insubordination" [CW, Aug. 13]. Epson denied wide-scale interception but later stated that it "could not guarantee the privacy of documents and messages" stored anywhere in the company.

That statement puts Epson among the majority of companies, according to Cavanagh, that have formally stated that privacy rights take a back seat to the corporate duty to run a successful business.

Ken Rogers

Shoars *challenged Epson's privacy policy*

Pacific Bell in San Francisco has a similar privacy policy, defining E-mail as "the property of the company and to be used for business use only, unless prior permission is given from a supervisor."

Warner Brothers, the film and video division of Time Warner, Inc., has taken a stronger privacy stance. The Burbank, Calif.-based company hired Shoars as E-mail coordinator in August, about seven months after Epson fired her.

Bill Cotter, director of international data processing and domestic office systems at Warner, said Shoars' name came up in a discussion about E-mail privacy among IS managers. Cotter said he interviewed her and found "that she had the interconnectivity and E-mail experience that is absolutely necessary for this job." Also, he explained, her privacy philosophy matched Warner's.

Two months later, he said, he is impressed with her work in implementing Warner's strict E-mail policy: "If it's not addressed to you, it's not yours."

No random checks

Employees are told not to conduct personal business on company time or equipment, but no random checks by IS — for compliance or systems maintenance — are allowed, Cotter said: "If you don't have people's confidence, what's the purpose of having an IS department?" He added that employees need to feel their system is free of excessive scrutiny before using it fully.

Epson and Warner "are at the extremes of a bell-shaped curve," said Walter Ulrich, an analyst who follows E-mail issues for consulting firm Arthur D. Little, Inc. "Most companies' [privacy] policies are de facto, not written, but most executives won't go on routine electronic fishing expeditions," he said.

Steve York, a member of the Aerospace Industry Association's E-mail committee, said the matter has made for hot debates lately. York is also manager of information exchange technologies for Hughes Aircraft Co.

He said Hughes is in the process of writing a privacy policy, one built at least partly on the committee's findings. York said that reading portions of some messages is unavoidable with Hughes' 25,000-employee, multivendor environment. However, aside from troubleshooting, he said, messages are confidential.

Stanford explores 45M bit/sec. net standard

ON SITE

BY ELISABETH HORWITT
CW STAFF

PALO ALTO, Calif. — While most users are letting the networking industry decide which high-speed networking protocols will be widely used this decade, Stanford University has already begun evaluating Switched Multimegabit Data Service (SMDS) as a possible way for its researchers, academics and scientists to collaborate over distance at 45M bit/sec.

Stanford began installing SMDS nodes on campus last summer. Last week, it participated with Pacific Bell in an SMDS demonstration at Interop '90 in San Jose, Calif. Also, on Nov. 15, the university and Pacific Bell will initiate a six-month commercial trial of an SMDS network that will handle such bandwidth-hungry applications as transfer of medical images and earth resources mapping.

If the California Public Utilities Commission approves, the trial will extend beyond Stanford to "the outside world," including the U.S. Geological Survey and a hospital, said Frank Liu, a technical staff member at Pacific Bell.

In addition, Stanford plans to communicate over SMDS links with other members of the Bay Area Regional Research Network (Barrnet).

Stanford's Yundt *sees need for 45M bit/sec.*

"We are in the learning stage at this juncture," said Wiliam Yundt, the university's director of network and communications systems.

"We have a reasonable understanding of the pros," such as being able to share high-speed line costs with other users, he said. "We see a need for those speeds in the near term."

In an SMDS network, a central office is the hub of a multisite, and often multiorganization, network. As with a packet-switched network, customer premises equipment packetizes data and equips each packet with an address so that the carrier can route it to the right destination. Unlike packet switching, however, SMDS networks can handle up to 45M bit/sec. and share the same carrier fiber-optic lines and equipment as voice and other types of transmissions, Liu said.

An SMDS network allows multiple customers to share the cost of high-speed connections and pay according to use.

For 1.5M bit/sec. T1 connections, customers can use ordinary copper wiring to the closest carrier site; however, a fiber link will be needed to customer premises that want the higher 45M bit/sec. T3 speeds.

High-speed users

SMDS networks target users who need to communicate in intense, high-speed bursts with a large number of geographically distributed sites. Sites that communicate regularly over high-speed lines can use the traditional point-to-point T1 or T3 connection, Yundt pointed out.

Doctors who want to access records and images, such as CAT scans, from a number of local hospitals would be one type of user that could benefit from SMDS, Liu said.

The technology also puts control of the network in the carrier's hands, which is an advantage to organizations that do not want to own and manage their own networks, Liu said.

In the initial stage of the pilot, which begins next month, Stanford researchers will access multimegabit medical images from computers at the university's medical center, Yundt said. Because it is hard to ensure that files that large arrive intact across a shared, switched network, the university is evaluating the SMDS capability of "segregating" bandwidth on the network, Yundt said. This would potentially guarantee reliable delivery over a path that is separate from the rest of the "shared network," he added.

While the initial pilot will use 1.5M bit/sec. SMDS links, Stanford is more interested in the 45M bit/sec. version, which will be pilot-tested by the university beginning next year, Yundt said. "We already have an extensive network of T1 links," he explained.

Pacific Bell and other regional carriers hope to introduce SMDS in late 1991 to 1992, Liu said.

SMDS was initially conceived as a metropolitan-area networking protocol, but the local carriers now hope to extend its reach nationwide with the help of long-distance carriers, Liu said.

Cabling

FROM PAGE 73

Va. "High-speed twisted-pair is coming into our future because I'm buying 18 workstations," he said. "The only way I have to get at them is to run an extension to my backbone [thick coaxial] or use my existing twisted-pair."

Adding to the tangle of cabling choices are emerging advances in wireless LAN technology, such as NCR Corp.'s announcement last month of a $1,390 wireless LAN interface card for Novell, Inc. Netware networks.

The pot of cabling spaghetti can be boiled down, at least to one general rule of thumb, according to cabling analysts: When in doubt, install fiber in the backbone and twisted-pair to the desktop. Fiber has bandwidth potential into the gigabytes as well as complete immunity to electromagnetic interference, making it the most reliable medium available. Unshielded twisted-pair is already installed to most desktops.

Tom Nolle, president of CIMI Corp., a consulting firm in Voorhees, N.J., pointed out that "coax and fiber can't run through existing telephone channels. My personal feeling is that you run unshielded twisted-pair wherever you have individual workstations operating at 16M bit/sec. speeds or under. Wherever you're not running that, you run fiber."

"We're using fiber in our backbone, but not to our workstations yet," said Jack Sprague, consulting systems analyst at Frito-Lay, Inc. (see related story next page). Frito-Lay is running IBM's Type 2 cabling — which contains a pair of shielded twisted-pair and a pair of unshielded twisted-pair — to its individual desktop computers.

Smith, Kline, Beecham Consumer Brands in Pittsburgh invested $500,000 in IBM Type 2 cabling four years ago "when the fiber option was not yet available," said Richard Podgurski, director of information services. "We've considered fiber, but the investment in IBM's cabling scheme is already there."

Nolle commented, "Any company pulling cable today that doesn't anticipate a need for fiber in the future is making a mistake that it will pay dearly for someday."

NEW PRODUCTS

The following is a summary of some of the products announced at the Telecommunications Association convention in San Diego last month:

British Telecom, Inc.'s Videocodec VC 2100 coder/decoder provides enhanced picture quality at transmission speeds of 56K, 1.544M or 2.048M bit/sec. The product complies with the CCITT H.261 international standard for videoconferencing, the vendor said. It is available for $44,500.

British Telecom
2560 N. First St.
San Jose, Calif. 95161
(408) 922-0250

Bytex Corp. introduced a product designed to provide network managers with an additional safeguard against localized physical disasters.

The Disaster Protection Switching System enables network managers to transfer control of distributed access units from a disabled primary network switch to a backup switch at a disaster recovery site.

The product is priced between $16,000 and $20,000 for a 1,000-port configuration.

Bytex
120 Turnpike Road
Southboro, Mass. 01772
(508) 480-0840

Infotron Systems Corp.'s Streamline 2510, a multiprotocol X.25 packet assembler/disassembler, line concentrator and X.25 Level 2 switch, includes 32 full-duplex synchronous and asynchronous ports that can be configured independently for any allowable protocol. It can also operate simultaneously with other protocols, the vendor said.

A four-port version costs $5,000, according to the company.

Infotron
Cherry Hill Industrial Center
Cherry Hill, N.J. 08003
(800) 926-9600

Micom Communications Corp.'s Marathon series of data, voice and network servers were designed to integrate data, voice, facsimile or local-area network traffic over low-speed leased lines, the vendor said.

A 5K bit/sec. model combines four different technologies — data compression, speech compression, fax demodulation and fast-packet multiplexing — to reduce the amount of bandwidth that is necessary for data, voice or fax transmissions that run over leased lines, according to the vendor.

Pricing for a 5K bit/sec. model equipped with six ports begins at less than $3,000.

Micom Communications
4100 Los Angeles Ave.
Simi Valley, Calif. 93063
(805) 583-8600

Rad Data Communications, Inc.'s Trimlink-800 can multiplex eight synchronous input channels at rates of 19.2K bit/sec. onto two mutually redundant, 19.2K bit/sec. composite links.

The eight-channel synchronous data compressor includes dual-aggregate links that support the V.32 standard and feature a compression ratio of greater than 4-to-1. A two-link unit is priced at $7,000.

The company also unveiled two CSU/DSUs designed for use with fractional T1 services: the FCD-1M ($1,500) and FCD-1X ($2,000).

Both models enable a synchronous data channel to be connected over a public T1 network without requiring a T1 multiplexer. While connected to T1 networks, the users have to pay only for the amount of bandwidth required, according to the vendor.

Rad Data Communications
151 W. Passaic St.
Rochelle Park, N.J. 07662
(201) 587-8822

Hub help

The intelligent wiring center concept will ease Frito-Lay, Inc.'s expansion from seven to 47 sites next year, said Jack Sprague, consulting systems analyst. Proliferating advances in intelligent wiring center technology will play an important role in the transition, he said.

Intelligent wiring centers — or smart hubs — allow users to connect nodes on a local-area network or interconnect LANs running over different media in a star configuration, which makes network management simpler. Recent developments in hub technology include terminal server support in Racal Interlan's INX5000, FDDI support in Cabletron Systems, Inc.'s Multi Media Access Center, 16M bit/sec. fiber support in Proteon's Series 70 and Synoptics Communications, Inc.'s integration of an Ethernet router into its Lattisnet hub.

In addition, Synernetics, Inc. introduced the Lanplex 5000, which operates many Ethernet LAN segments in parallel and multiplexes them onto an FDDI backbone.

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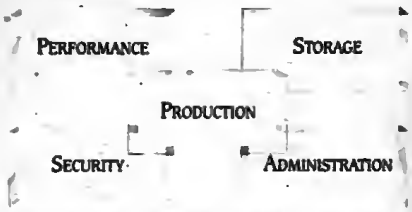

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MANAGER'S JOURNAL

EXECUTIVE TRACK

Peter Kenyon has joined **Silicon Graphics, Inc.** in Mountain View, Calif., as vice-president of information services, reporting to Ken Coleman, senior vice-president of administration.

Kenyon, 46, was most recently president of Pactel Meridian Systems, a partnership between units of Pacific Telesis Group and Northern Telecom, Inc. Kenyon joined Northern Telecom in 1982 and has held positions in finance, information services and general management. His last position there was vice-president and general manager of the Meridian Terminals Division. Kenyon holds a degree in finance from Liverpool College of Commerce.

****

Share, Inc., the Chicago-based association of users of large IBM systems, recently announced its board of directors for 1990 to 1992.

Sandy Moy of the University of Washington was named president, **John A. Chapman** of Amoco Corp. was named vice-president, **John H. Bevis** of the University of Florida's Northeast Regional Data Center was elected secretary and **Lois Hoyer** of Northern Trust Bank was named treasurer.

New directors are **Anne Calouri**, U.S. Army Systems Software Center; **Bill Choate**, Emory University; **Cynthia Combs**, United Services Automobile Association; **Tom Rupeis**, John Hopkins Applied Physics Lab; and **David C. Thewlis**, Kaiser Permanente Medical Care Program.

****

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

'Mad scientist' turned IS chief

Howard Ory revitalized sleepy IS group at Centers for Disease Control

BY JOSEPH MAGLITTA
CW STAFF

He's a physician and epidemiologist who wears flannel shirts one day and his white Navy captain's uniform the next. He likes to tape cartoons to his office door, jokingly describes himself as a "scientist gone mad," has appeared on *Good Morning America* and has been interviewed by *Cosmopolitan* magazine.

Howard Ory is not your average information systems director.

Yet here is Ory, a noted authority on birth control, in charge of all computing and telecommunications at the Centers for Disease Control (CDC), the Atlanta-based federal agency charged with public health education and disease prevention in the U.S.

In just five years, Ory, a self-described "sophisticated end user" working at his first computer job, has transformed a sleepy IS shop into a modern, dynamic organization that is admired on Capitol Hill as a model of government computing. CDC's new on-line information system, called Wonder, has drawn congressional praise and was a finalist in this year's *Computerworld Smithsonian Awards*.

As director of CDC's Information Resources Management Office (IRMO), the mustachioed 46-year-old acts as a liaison between CDC's 6,000 users and 200 IS employees and contractors from his office in the outskirts of Atlanta.

A witty and articulate speaker, Ory — whose only formal IS education consists of a couple of in-house programming courses — is probably CDC's most active technology evangelist.

PROFILE: Howard Ory

Ann States/Sabia

Position: *Director of information resources management, Centers for Disease Control*
Achievements: *Transformed an ineffective IS shop into one now described as a model of government computing*

"Howard is uniquely qualified to head up IRMO," said Glenda Cowart, CDC's director of program support and Ory's boss. "He carries a lot of respect at CDC because of his personal accomplishments."

So how does one go from being a physician and research scientist to becoming IS chief at one of the government's most visible agencies?

"I learned to compute as soon as I came to CDC," Ory recalls. "I was involved in analyzing large data sets. After doing those on a card sorter, I figured there had to be a better way."

Ory, a native of Worcester, Mass., began as a epidemiological researcher at CDC headquarters in 1971. For 14 years, he continued his work exploring the medical side-effects of birth control pills, rising through the ranks to become an assistant program director.

To popularize his research, Ory did interviews on television shows such as *Good Morning America* and *The CBS Morning News* and national magazines such as *Cosmopolitan*, *Redbook* and *McCall's*. During this time, his work with computers was largely limited to using SAS Institute, Inc. software for data analysis.

Then, in 1984, Ory's career took an unexpected turn. Former CDC director James Mason ordered a business study to help the agency find ways to

Continued on page 84

Is automation turning managers into clerks?

BY SALLY CUSACK
CW STAFF

Are managers actually spending *more* time performing clerical tasks now than they did before office automation? An economist at the Georgia Institute of Technology said they are — because secretaries and support personnel are being replaced by office automation technology.

"By and large, computers are not a good substitute for secretaries," said Peter G. Sassone, a technical economist at Georgia Tech's School of Economics in Atlanta.

Sassone noted that while computers can make substantial contributions to clerical efficiency, there are many tasks they are not equipped to handle.

"Secretaries do a wide variety of tasks, from sorting mail to making travel arrangements, and if a secretary is eliminated by office automation, the aforementioned tasks often fall to the managers themselves — not a productive way for professionals to spend their time," Sassone said.

Using a special method for analyzing work profiles, Sassone studied 1,563 employees in 77 offices in four Fortune 50 companies.

The study of 184 middle-level managers found that they devoted 16% of the work week to administrative support tasks, including filing, making copies and typing. Sassone said he suspects that the findings do not reflect the activities of top-level executives, who are more likely to work with a large support staff. "We were looking at the broad middle of these companies, where most of the payroll dollars are spent," he said.

Sassone stressed that office automation is basically a complementary, not substitute, technology for the workplace. Substituting technology for people is not always effective, he cautioned.

So what is his advice to corporate America? "Be wary of 'substitutional' strategy — people saying things like 'we can reduce the staff by half,'" he said. "Instead, be ready to use technology to enable people to make the maximum professional contribution."

Ory

CONTINUED FROM PAGE 83

more effectively use information technology. Ory found himself on the committee performing the study.

"My boss at the time said, 'I don't want to do it — you do it,' " Ory recalls. "So I went off to the woods for three months."

Among the group's recommendations was for IS to be headed by a CDC researcher. As the only researcher on the committee, Ory was chosen as the founding head of IRMO. His first step was to unite scattered IBM and Wang Laboratories, Inc. resources with telecommunications and to set a new direction for IS.

"It was a classic old-line [data processing] shop," Ory explains. "The head was an engineer. By and large, the people in it were more interested in the computer for the computer's sake rather than for the user's sake."

Ory quickly learned a lesson that has become the cornerstone of his management approach: Surround yourself with the best available technical talent. "If you've got a handicap, if you don't know something, you've got to bring someone in like a Seeing Eye dog," he says.

He started by signing on luminaries from the old IS staff, who then helped pick out other "keepers." Former mainframe wizard Jerry Sanders became chief of the information technology branch, software guru Jerry Gentry became assistant director of research and development, and John Davis, a 28-year veteran, became assistant director of technical operations.

By 1987, thanks to hirings, firings, promotions and retirements, the IS department had a new look. Today, fewer than two dozen employees remain from the old IS staff of approximately 100.

Some of Ory's management team members have backgrounds as eclectic as his own. For example, Joseph Reed, head of applications development, was a physics professor who had spent eight years at a major accounting firm. Andy Freed, a driving force behind the Wonder system, is a physician.

After nearly six years on the job, Ory said he is convinced that a nontechnical person can effectively lead IS. Instead of worrying about every detail, Ory says he is free to think about the larger issues of using information technology to enhance the organization's mission.

"My job is to enunciate the vision and somehow encourage [staff members] to buy into that vision and keep them in the same direction," he says.

Ory's methods seem to work. During the last few years, his team has transformed an IBM 3090 200E mainframe, Cobol and 3270 terminal environment into a modern cooperative processing network with various local-area networks and shared databases.

More than 95% of CDC's knowledge workers have personal computers on their desks, and some 2,000 voice-mail users send nearly one million messages per year.

"Howard is visionary, creative and incredibly energetic for someone at this point of his career," says Jim Seligman, IRMO's deputy director. "He's built a good crew that we can trust universally."

Taking a hands-off approach sometimes means that Ory must spend time sorting out conflicts among technical staff members.

"There's always a lot of constructive conflict going on. My job is to referee that and to make sure that the conflict is always constructive," he says.

> "I'M AN OUTSIDER, but that's a tremendous advantage . . . After five years of delivering product after product, there's some sense that I listen harder to what the scientists want."
>
> HOWARD ORY
> CENTERS FOR DISEASE CONTROL

Despite these occasional rocky moments, Ory sticks by his approach: "Delegate cleanly; trust them. Once you agree on the vision, it's their job to deliver it. It's not my job to stand over their shoulder."

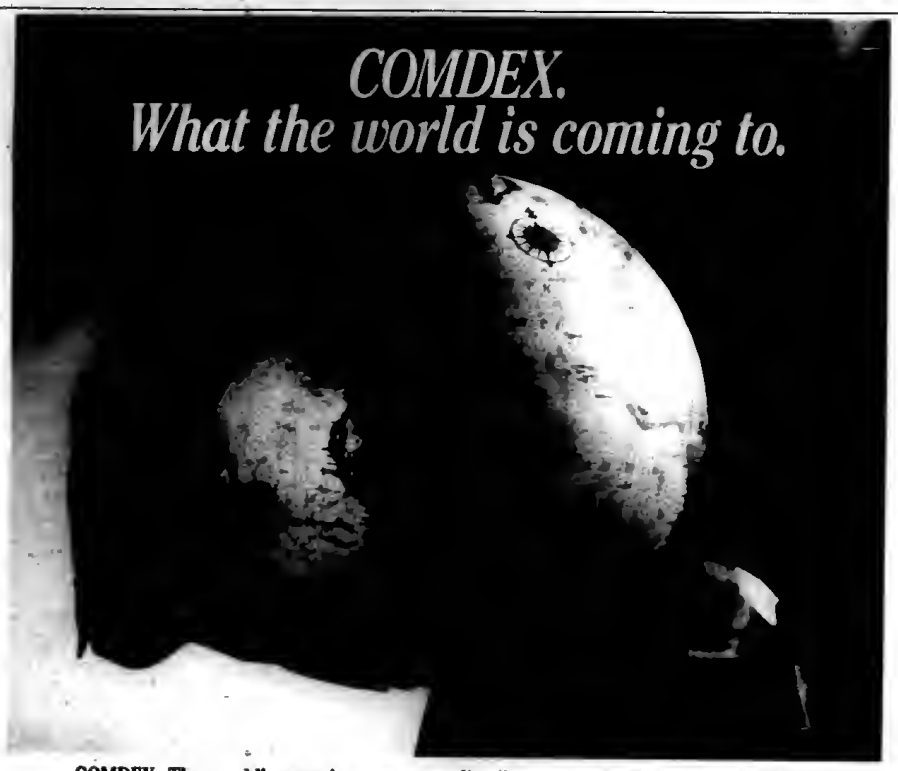
Despite his new duties, Ory still manages to work on birth control research and occasionally dons the white uniform of the U.S. Public Health Service. Still, his big focus is on fostering technology growth.

After five years, does Ory consider himself an IS professional? "I'm an outsider," he says, "but that's a tremendous advantage. The problem with the old DP shop was that the scientists didn't trust them, didn't trust that they'd get what they wanted from them. After five years of delivering product after product, there's some sense that I listen harder to what the scientists want."

Through it all, Ory tries to keep things light. The cartoons taped to his office door are a constant reminder not to get too heavy. "That's something my wife, who is a psychotherapist, taught me," Ory says. "If you don't use humor, you intimidate people."

Laughing, he adds, "Probably by now, I've been in the job long enough that they don't trust me either. But I'm working for the people I'm supposed to be helping."

Does coming from an end-user background in itself bring greater credibility? "At least they don't dismiss me out of hand," he laughs. "They think I'm just a scientist gone mad."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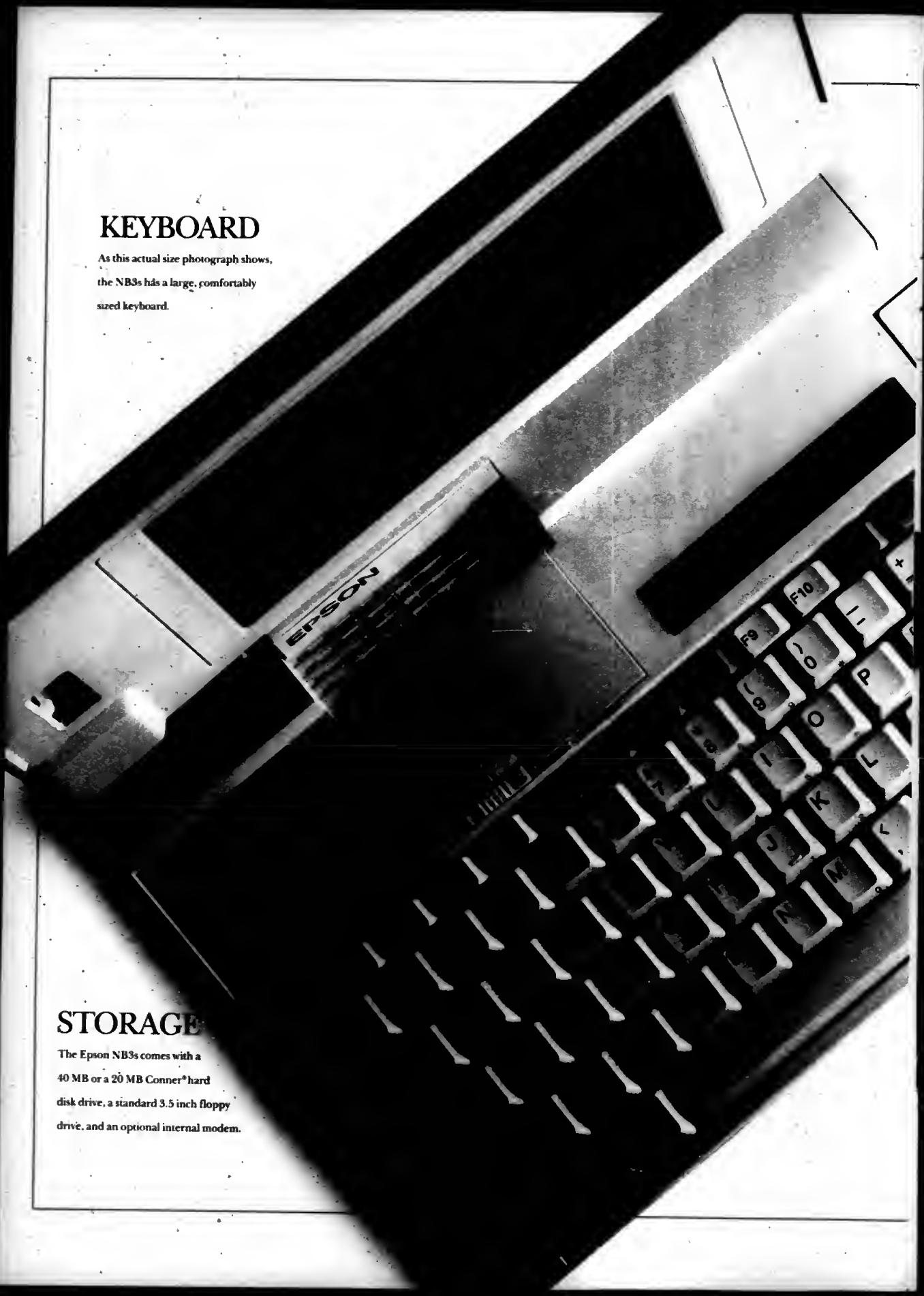
CW 10/15

In designing the new 386SX notebook, Epson engineers had to weigh a lot of options.



KEYBOARD

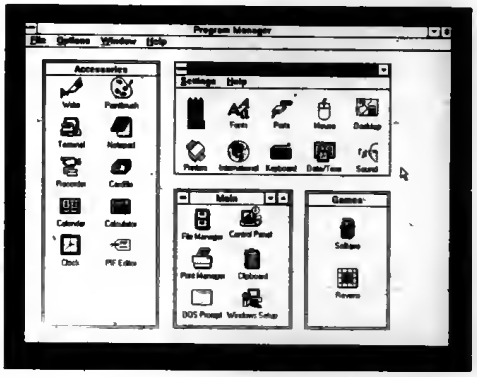
As this actual size photograph shows, the NB3s has a large, comfortably sized keyboard.

STORAGE

The Epson NB3s comes with a 40 MB or a 20 MB Conner® hard disk drive, a standard 3.5 inch floppy drive, and an optional internal modem.

VGA

The large backlit, 640 x 480 resolution LCD screen includes 16 gray scales for sharp black-on-white VGA graphics.



386SX

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CLIPS

Tim Lewis

Summaries from leading scientific and management journals

"Information partnerships — Shared data, shared scale"

By Benn R. Konsynski and F. Warren McFarlan

Harvard Business Review
September-October 1990

■ Developments in data communications, storage and retrieval have facilitated the exchange of information between companies. As a result, businesses can join forces *without* merging more easily than ever before. Diversification becomes possible while maintaining corporate focus on a core line of business.

Information partnerships can facilitate joint marketing and the development of new channels of distribution for services. By sharing investments in hardware and software, companies can reduce their financial and technical risk.

There are four types of information partnerships: joint marketing, such as IBM and Sears, Roebuck and Co.'s Prodigy effort; intra-industry efforts, such as the value-added network tying together many U.S. insurance firms; customer-supplier partnerships, such as the information systems network linking Baxter Healthcare to its clients; and vendor-driven relationships, such as the electronic data interchange network set up by General Electric Information Services.

What are the keys to building such successful "information partnerships?" To start, senior management at participating companies must share a common vision of the partnership's goals, or the partnership will come to a halt. Other success factors include the need to bring reciprocal skills in information technologies to the deal and to make sure interconnecting hardware and software is technically feasible. Some coordination of technical and business policies will also be necessary in order to ensure that information can be packaged and shared in ways that are mutually beneficial to all partners. — Amiel Kornel

"Evaluating alternative computer acquisition strategies"

By David Ameen

Journal of Systems Management
September 1990

■ There is plenty of advice on how to select the right hardware but very little professional literature on choosing the least costly way to acquire that hardware. Leasing, renting, purchasing and third-party leasing plans are the four major acquisition options, but each one has its advantages and disadvantages.

For example, an outright purchase requires a large initial capital outlay but is less expensive in the long run, assuming that the hardware is kept for several years.

A cost-benefit analysis of various acquisition strategies requires the IS manager to establish financial objectives and identify relevant assumptions, such as the cost of capital, the economic life of the equipment and its salvage value. Then these variables are plugged into a cash-flow equation to produce a ranking of the acquisition plans.

Because some of the assumptions used in the equation require predictions of future technology and economic conditions, IS managers should conduct a sensitivity analysis to see how much the results would change under different circumstances. — Mitch Betts

"Groupware in practice: An interpretation of work experience"

By Christine Bullen and John Bennett

MIT Center for Information Systems Research
Working paper, March 1990

■ Corporate interest in groupware, software intended to enhance the productivity of organizations through the use of electronic mail, centralized scheduling and other functions, is increasing.

Before such a product is implemented, management should be careful to understand the following:

- People report most value from tools that parallel their nonelectronic activities, so it follows that E-mail is the most widely used groupware function.
- Users must feel that the benefit outweighs their effort in learning to use and using the system. Calendaring systems are often considered too clumsy and difficult to use to be worth maintaining.
- Groupware intervenes at both a technological and social level. It introduces changes both in the methods used by a group and in the interactions of the group.
- Work processes may need to be redesigned to function more smoothly with the new technology. — Chris Lindquist

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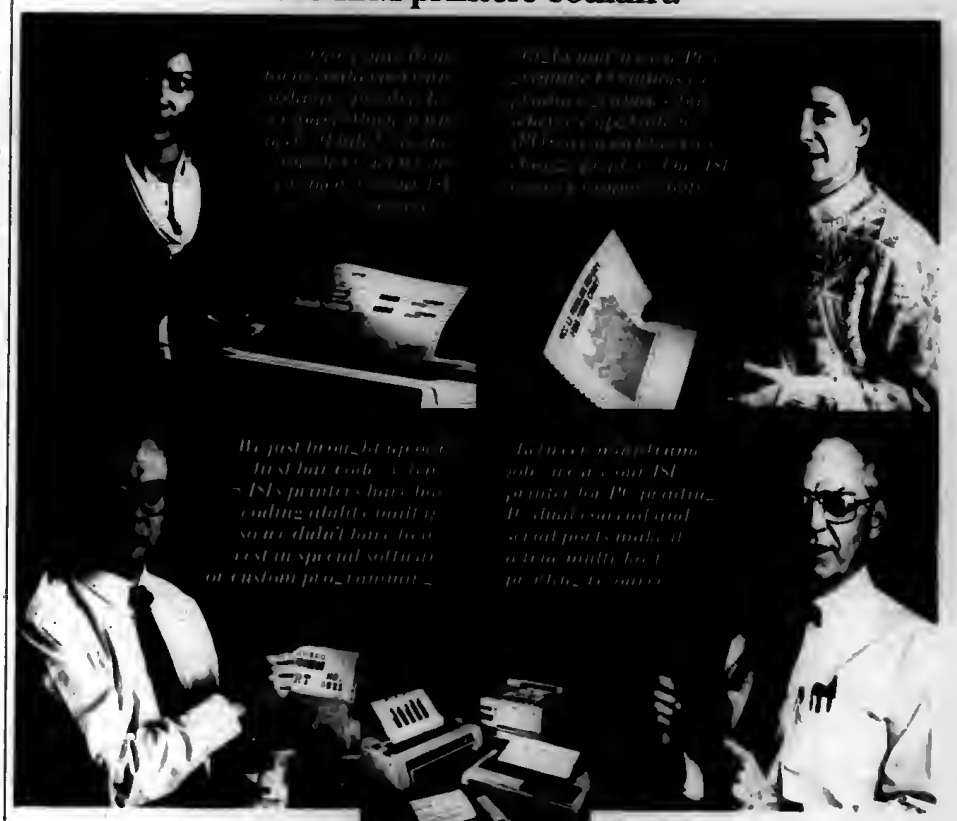

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Tips for smooth software sailing

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — In software development, it's best to look before you leap.

James Wetherbe, a University of Minnesota professor who runs the school's MIS Research Center, said he believes that managers of software projects often do not allow themselves enough time to analyze their objectives, dooming their software development efforts. The goals of zero-defect software, simplified maintenance and flexibility can only be reached by those who have taken the time to reflect, Wetherbe maintains.

"You get the vision, and then you realize you can't get there from here," Wetherbe told some 50 systems development professionals attending a recent Association for Systems Management seminar here.

Beyond technology, software managers must learn to orchestrate their project staff, much as a coach assigns players in a game of pickup basketball, Wetherbe said. Some team members are better suited to interview end users about software requirements, while others are better at coding or keeping the project on track and on time.

To detect errors or bugs in the code, extensive testing is in order. "Your feedback loops have to move both backwards and forwards so that errors get detected before your system ever affects the customer," Wetherbe said. "By installing a total-quality program, you can determine whether a problem is coming from the software code or from an ill-conceived invoice that you're trying to automate."

End users will be happiest if goals are kept within reach. Cross-functional joint application design groups can often isolate key systems parameters.

"Prototyping generates excitement," Wetherbe said. "It brings reality to the concept behind the system. Even though you have to make it clear that the prototype is just that — it's not a completed system — the client can see where you're going."

If they are seeking quality, software managers should try to pilot their projects, just as airline pilots guide their aircraft through crowded skies, Wetherbe said. Their software programs should "fly" as well as jumbo jets do — with only a few mishaps among the millions of lines of code (or passenger miles, as the case may be).

"If you have the same error rate as the airport's luggage-handling facility," Wetherbe said, "you know you're not doing everything right."

MANAGEMENT BRIEFS

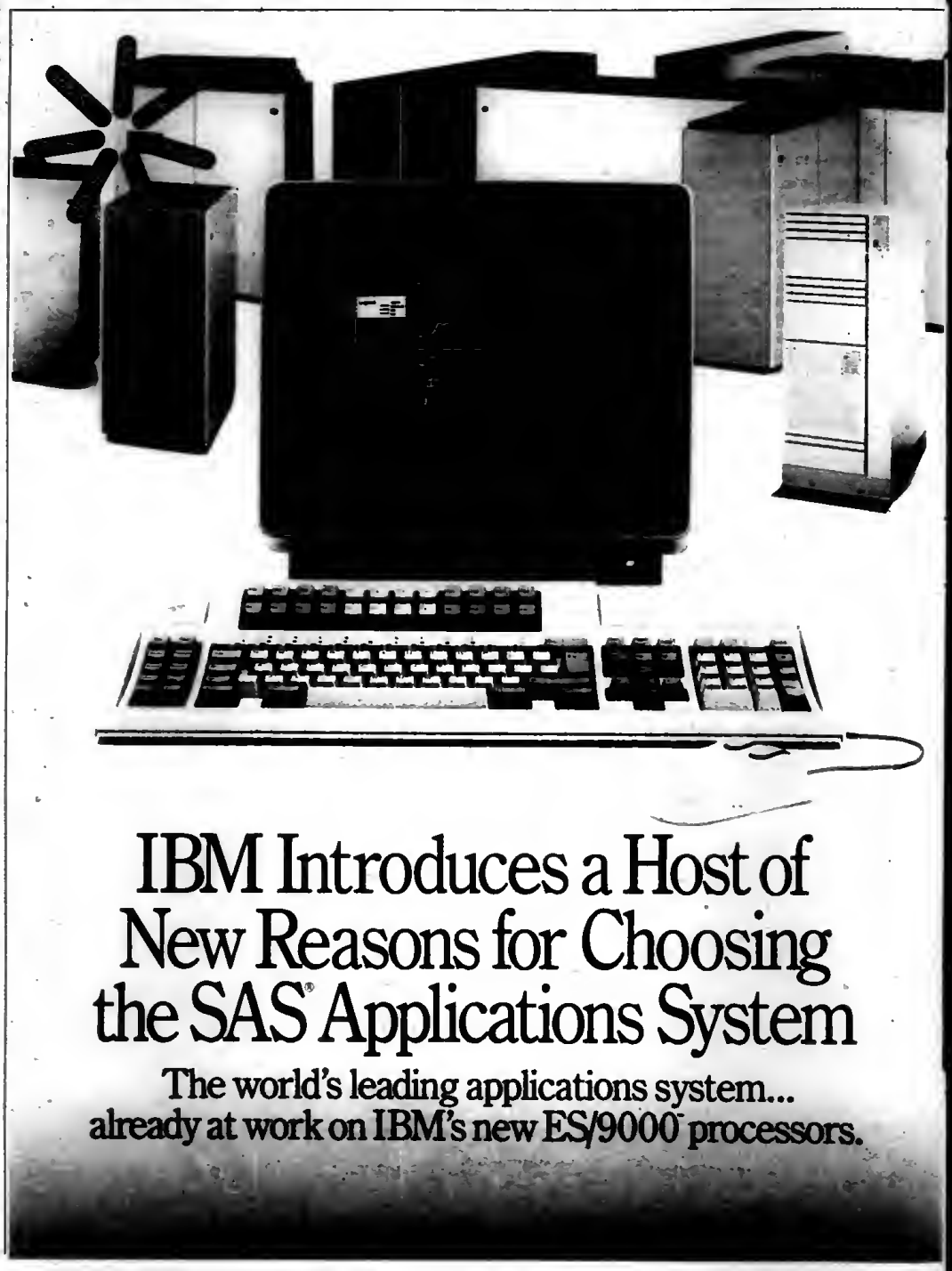
IUA adds on to its rolls

Former Cullinet Software, Inc. and Applied Data Research, Inc. (ADR) database users are now united in the same organization. **The IDMS User Association (IUA)** recently approved the addition of **Complete Applied Data Research Environment (CADRE)** into its international organization.

Both former companies and their product lines are now part of Computer Associates International, Inc. ADR users will be included in the IUA's annual user conference, IUA '91, slated to be held in Salt Lake City on April 14-18, 1991.

Uniforum, the international association of Unix users, awarded its first $10,000 research grants to two graduate students studying computer science and management science.

The winners were Kevin R. Fall, a Ph.D. candidate in computer science and engineering at the University of California at San Diego, and Basil A. Sherlund, who is pursuing a master's degree in computer science at Wayne State University in Detroit.



CALENDAR

OCT. 28 - NOV. 3

CIO Information Strategies Conference. Palm Springs, Calif., Oct. 28-30 — Contact: Lori Cardarelli, CIO Magazine, Framingham, Mass. (508) 872-8200

Telon International Users Conference. Orlando, Fla., Oct. 28-31 — Contact: Anthony J. Paoni, Pansophic Systems, Lisle, Ill. (800) 344-8573.

Knowledge-Based Systems in Everyday Use: Increasing Productivity Profits. Chicago, Oct. 29-30 — Contact: Donna Kacin, Decision Support Technology, Cambridge, Mass. (617) 354-6400.

The Hammer Re-Engineering Conference. Cambridge, Mass., Oct. 29-31 — Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

Electronic Data Interchange for Government: New Approaches to Information Collection and Dissemination. Washington, D.C., Oct. 30-Nov. 2 — Contact: USPDI, Silver Springs, Md. (202) 445-4400.

Unicom '90. Washington, D.C., Oct. 31-Nov. 2 — Contact: North American Telecommunications Association, Washington, D.C. (202) 296-9800.

Unix Expo '90. New York, Oct. 31-Nov. 2 — Contact: National Exhibitions, New York, N.Y. (212) 391-9111.

Evaluating CASE Tools. Atlanta, Nov. 1-2 — Contact: Digital Consulting, Andover, Mass. (508) 470-3880.

NOV. 4 - 10

Adapso Management Conference. Phoenix, Nov. 4-7 — Contact: Adapso Education Department, Arlington, Va. (703) 284-5355.

Decision Support and Executive Information Systems: A Managerial Perspective. Cambridge, Mass., Nov. 5-6 — Contact: Decision Support Technology, Boston, Mass. (617) 482-3596.

Successful Implementation of Imaging Technology. Boston, Nov. 5-6 — Contact, KPMG Peat Marwick Executive Education Registrar, Montvale, N.J. (800) 762-3932.

CASE: The Next Generation. Washington, D.C., Nov. 5-7 — Contact: Digital Consulting, Andover, Mass. (508) 470-3880.

ISDN Week. London, Nov. 5-8 — Contact: IGI Europe, London, England (011) 41 61 6915111

Association for Computing Machinery Conference. Arlington, Va., Nov. 6-7 — Contact: Jim Adams, ACM, New York, N.Y. (212) 869-7440.

Messaging '90. New York, Nov. 6-8 — Contact: Information Publishing Corp., Houston, Texas (713) 974-6637.

Digital Dealers Association Annual Meeting. Tucson, Ariz., Nov. 6-9 — Contact: DDA Administrative Office, Chelsea, Mich. (313) 475-8333.

Computer, Office Systems & Services Conference. Houston, Nov. 7-8 — Contact: Show America Management, Houston, Texas (713) 890-0397.

Design Engineering Show and Conference. Atlanta, Nov. 7-9 — Contact: Design/South, Stamford, Conn. (203) 964-0000.

GE Information Services Business Communications Users Group Meeting. Orlando, Fla., Nov. 7-9 — Contact: Wendy Herman, GE Information Services, Rockville, Md. (301) 340-4977.

GIS/LIS. Anaheim, Calif., Nov. 7-10 — Contact: GIS/LIS, Bethesda, Md. (301) 493-0200.

Expo Comm China '90. Beijing, China, Nov. 8-13 — Contact, Ron Akins, Krause & Associates, Bethesda, Md. (301) 986-7800

Southeastern Small College Computing Conference. Hickory, N.C., Nov. 9-10 — Contact: Dr. Frank Cheatham, Campbellsville College, Campbellsville, Ky. (502) 465-6158.

NOV. 11 - 17

Share 73.3. Fort Worth, Texas, Nov. 11-14 — Contact: Share, Chicago, Ill. (312) 644-6610.

Computer-Canada First Toronto, Nov 12-14 — Contact: U.S. Department of Commerce, Office of Canada, Washington, D.C. (202) 377-3718.

Autofact '90. Detroit, Nov. 12-18 — Contact: SME, Dearborn, Mich. (313) 271-0777.

Comdex/Fall '90. Las Vegas, Nov. 12-16 — Contact: The Interface Group, Needham, Mass. (617) 449-6600.

Supercomputing '90. New York, Nov. 12-16 — Contact: Malvin Kalos, Cornell Theory Center, Cornell University, Ithaca, N.Y. (607) 255-7157.

Hawaii's Governor's Symposium on High Technology: Making Strategic and Technical Alliances for East-West Software Development and Trade. Lihue, Kauai, Hawaii, Nov. 13-15 — Contact: High Technology Development Corp., Mililani, Hawaii. (808) 625-5293.

Wescon/90. Anaheim, Calif., Nov. 13-15 — Contact: Wescon/90, Los Angeles, Calif. (213) 215-3976.

National Conference and Exposition on Electronic Image Management in Government. Washington, D.C., Nov. 13-16 — Contact: Conference Manager, USPDI, Silver Springs, Md. (301) 445-4400.

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Marketers dig for openings in a blizzard of raw data

BY BARBARA FRANCETT

Without information technology, Mauna La'i guava drink wouldn't be on your supermarket shelf today. A minor tragedy? Not to Ocean Spray Cranberries, Inc., its maker. Mauna La'i carved out a piece of new territory for Ocean Spray — tropical juice drinks — and provided an important new source of revenue. It was an opportunity that the firm nearly missed.

Initial test market results for the product were not promising, says John Tarsa, operations manager of information services, a marketing support group at the Lakeville, Mass., firm. Indications were that the product would not meet sales objectives. Ordinarily, Tarsa says, that would have meant the product would never see mass distribution. In this case, hnwever, the company decided to go a step further and recheck the product's prospects through an electronic test market service run by Chicago-based Information Resources, Inc. (IRI). This further analysis "showed that the depth of repeat purchases would make up for the lack of volume in the trial," Tarsa says.

Based on the findings, Mauna La'i was launched. "It's been very successful, but if we had been using only traditional methods," Tarsa says, "it would have been killed."

Since that time, Ocean Spray has supplemented its traditional market analysis tools with two systems from IRI — a decision support tool called Dataserver and an expert system for pattern analysis called Coverstory.

All market researchers know that new markets and new products are key to maintaining and expanding market share. Increasingly, what they are also discovering is that information systems can help them to uncover hidden opportunities amid the masses of facts and figures routinely collected about both new and existing products.

Reinhold Spiegler

Nyce (left) and Nash *say Cadbury's IS and marketing departments work hand-in-hand to get the most from database resources*

At Cadbury Beverages, Inc., the Stamford, Conn.-based maker of Canada Dry and Hires carbonated beverages as well as Mott's applesauce, IS works closely with market researchers to filter actinnable information from massive data flows. "It's a team effort," says Joe Nash, vice-president of MIS.

Support from IS for the market research group, however, is limited by design. "We provide hardware support and communications support, but we're not involved in software and database maintenance. We do provide shipment information to the syndicated services," Nash says. "We complement each other."

Two of the primary tools used to filter data are the same ones now in use at Ocean Spray.

Most of the data at Cadbury Beverages comes from Universal Product Code, or scanner, data gleaned at grocery stores and sold by syndicated services. "Data sets at the UPC level are huge. Without an electronic interface, this data is almost impossible to use," says Jim Nyce, vice-president of marketing coordination and research.

Cadbury obtains scanner data from IRI's Infoscan service and from A. C. Nielsen Co.'a Scantrack. Both syndicated services sell data by categories as well as summary-level information covering sales trends, pricing and approximate market shares for all product categories.

In the quest for opportunities to extend product lines or launch new products, Nyce combs through this scanner data, using Dataserver for a first-cut examination and then Coverstory for more refined analysis.

The search process typically starts in familiar territory. "First, we look for opportunities in our own product categories ... subcategories of products that perform better than average," Nyce says.

Sometimes, however, interesting outcroppings appear in unexplored areas. When that happens, the next step is usually to pull up additional information from one of the syndicated services and subject it to intensive analysis in hopes of identifying potential buyers. This type of analysis led to an addition to Cadbury Beverages' Holland House line of cooking wines.

What the firm discovered when it began looking into the marinade category, Nyce recalls, was a growing area without a significant national presence. "There were a number of small regional brands but no national brands, so there wasn't much competition," he says.

For Cadbury, demographic information on potential purchasers, in combination with data on product sales and competition, was enough to convince the firm to move ahead. Sometimes, however, companies want a more qualitative picture of potential purchasers.

For this closer look, they turn to a different category of databases — ones that go beyond location, age, number of children and education level — to address lifestyle factors such as kinds of books read, television viewing choices and vacation preferences. These databases categorize consumers by lifestyle into profiles called "clusters" — enabling market researchers to better target their efforts.

One such product is currently being used by The Buick Motor Division of General Motors Corp. in Flint, Mich., in conjunction with its owner records database. Prizm, a market segmentation database packaged on compact disc/read-only memory from Claritas Corp., defines U.S. neighborhoods by ZIP code

Continued on page 96

Francett is a free-lance writer based in Bloomfield, N.J.

INSIDE

Can you shrink test markets?
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What marketing wants in a system
Page 104

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Continued from page 93

according to 40 cluster types, with such names as Furs and Station Wagons, Black Enterprise and Shotguns and Pickups.

Prizm can be customized through the embedding of other categorization systems, databases and surveys. For example, the version Buick uses contains Arbitron Ratings Co.'a defined areas of dominant influence (ADI) for TV viewership. "We can run owner records and know what ZIP codes fall into ADI markets," says Paula Tarvenia, associate administrator in market research at Buick. "We can go into an ADI market, pull it apart and take a more microscopic look at it by ZIP code, census tract or block group for new opportunities. It's a nice way to find out who our customers are and how they fit into various lifestyles in relationship to each of our car lines."

Tarvenia's group uses Compass, a personal computer-based software system from Claritas, to analyze Prizm data and integrate it with company-collected data on existing customers. "It helps us get more into the consumer's mind," Tarvenia says. "For instance, Buick Reattas are very upscale two-seaters. People who buy them are on the go, they read a lot, they're into financial activities. A Buick Century, on the other hand, is not so upscale. Their buyers have a different lifestyle. We need to understand that."

At Perpetual Savings Bank in Washington, D.C., Tim Evans, director of marketing services, uses both Prizm and another segmentation system designed specifically for the banking and financial industry. This database, The Customer Information System (CIS) from Harte Hanks Data Technologies, runs on a mainframe at Harte Hanks and is accessed and analyzed using a PC software program called PCIS.

Downloaded information from CIS can also be imported into Claritas' PC-based Compass system for combination with Prizm data via a menu-driven interface developed by the two vendors at the bank's request. CIS gives Perpetual Savings a clustered view of its customers by common address. Prizm adds the lifestyle component. When the two are combined, Evans says, the result is a more insightful profile of current customers.

Campbell's Nelson *says modeling gives a good guess*

Tailored fit

In addition to better targeting of existing offerings, the bank uses the information gleaned from these systems to tailor products and services. "For example, last year, savings accounts were losing deposits," Evans says. "When we surveyed customers, we saw that they were opening money market accounts. So we developed a special money market account and targeted it to those people. Within a year, we brought in $200 million in deposits."

But the most dramatic use of segmentation data, according to Evans, is in site selection for new bank branches. "Clustering identifies market areas where we want to put in new branches," he says.

Finding new customers for existing products is crucial to business health, but launching new products is equally vital. Introducing a new brand is risky business: It's more expensive than merely extending an existing line, and it charts unknown territory. The potential for failure is great — as are the potential rewards.

"The road to success is new products — oot line extensions, new flavors or oew packaging," says Steve Rubinow, director of decision support services at Quaker Oats Co. in Chicago. "New product development requires creative processing."

At many firms, creativity gets an assist from sophisticated modeling systems that combine consumer surveys and complex algorithms that help to clarify the go or no-go decision.

At Campbell Soup Co. in Camden, N.J., where 30% to 40% of sales volume is typically derived from new products, a modeling system called Estimating Sales Potential (ESP) from NPD Group, Inc. is used to estimate the potential market for oew products. "By and large," says Dick Nelson, a director of market research services, the preliminary estimates yielded by models are "pretty accurate."

Quaker Oats' Rubinow *says success takes big, bold steps*

New products that Campbell has successfully launched after running them through the model gauntlet include Le Menu Light Style Dinners, introduced in 1986, and Souper Combos, microwaveable soup and sandwich combinations introduced in 1988.

The modeling procedures used by systems such as ESP are considered so secret that clients such as Campbell provide information to the vendors, who then run the models and provide the results. The service is expensive. For ESP, the cost is $50,000 to $100,000 for food and household products and $75,000 to $150,000 for drug products. Costs for another popular system, Bases from The Bases Group, range from $15,000 to $150,000 for one model run and related services.

Higher costs for failure

The alternatives, however, can be even more costly in terms of both investment and image. "If a product dies in public, it's an embarrassment," notes Ed Russell, who also serves as a director of market research services at Campbell. "Only R&D is risked inside."

Still, Russell notes that the sophisticated external modeling systems are too expensive to tap more than once per product, which still leaves a gap in terms of ongoing feasibility research. That's why he is developing data for a model of his own, using a Lotus Development Corp. 1-2-3 spreadsheet and his Intel Corp. 80386-based PC. "It's a simple and straightforward design to use distribution and sales numbers from syndicated data to make Year-1 projections," he says. Although Russell's model won't be as sophisticated as ESP and Bases, it will be a valuable adjunct to those options. "We can run it early and often," he says.

Baby-food maker Gerber Products Co. in Fremont, Mich., uses Bases to identify potential new hits and misses. New product development at Gerber is a systematic process, says Joaquin Pericas, director of market research. "From perhaps 10 to 15 new product ideas, we'll narrow our focus to three or four. Then we develop prototypes and do product-use tests," he explains.

Bases uses both a sophisticated algorithm and many inputs to gauge consumer response to a proposed new product. First, a test simulation is done. The proposed product is sampled by 500 consumers. "Those who say they would buy the product get sent home to use it for 10 days," Pericas explains.

All the consumers' responses are fed into the modeling systems, as are concept

Unsure if what they need is what they get

Sales and marketing managers say they believe that information systems are vital to their companies' strategies, but many are not sure if the data they get from IS is entirely relevant

Source: CW survey

CW Chart: Paul Mock

Facts don't replace instincts

Before the advent of information systems to help analyze and screen vast amounts of data, market researchers depended on a blend of customer knowledge, surveys, intuition and old-fashioned "people sense" to forecast which products consumers would crave next. Even the most advanced hardware and software cannot fully supplant those skills.

As market researchers attest, divining the heart of the American consumer is still a very "soft" science indeed. Knowing when to stop looking at the numbers and start listening to instinct is crucial.

"Market research is a soft process," says Steve Rubinow at Quaker Oats Co. "It's very hard to put rules around it and systematize it."

And there will come a point when it pays to stop trying. "This is not an exact science," echoes Paula Tarvenia at Buick. "A lot of intuition goes into the mix."

"We spend a lot on consumer research. We don't want to lose touch with individual consumers through computers," says Ed Russell at Campbell Soup Co. "The more technology there is, the more people yearn for human contact and the more it's necessary from a business point of view."

Once in touch with consumer trends, fathoming consumer thinking is still mind-boggling. "I don't care how much data you have in front of you, people aren't logical," says Tim Evans at Perpetual Savings Bank. "We've got savings accounts that offer 8% interest, and people still put their money in 5¼% passbook accounts. The more I know, the less logic I see."

Don't count on logic

The problem is that when it comes to customer needs and wants, A plus B rarely equals C. "Increasingly, the study of yesterday and today doesn't reveal the actuality of tomorrow," says Graham Denton, chief executive officer at Product Initiatives, a Toronto-based new products consultancy. "Analysis doesn't reveal what will be successful because in most markets, there is a high degree of fragmentation and competition. The challenge must be approached by more innovative thinking," he says.

This is where many market researchers — replete with data — fall down, Denton claims. "Most market researchers, especially North Americans, are bean counters and trend plotters. They tend to be linear thinkers," he says.

The solution? Information systems married to creativity. "Knowledge serves as the foundation for the creative process, which means looking at the data in different ways," Denton says. "There are new ways of interpreting data, but you need to know enough about your market to know whether an idea is good or not."

Where, then, should market researchers draw the line between their use of IS and the creative process? "Where you have enough information to come up with a good creative idea," Denton advises. But, he cautions, even this approach isn't foolproof. Beware of the idea that hinges on changes in consumer behavior or attitude. "No good idea, however creative, will change how people behave or think."

BARBARA FRANCETT

and usage measurements as well as marketing plan inputs such as distribution levels and promotion spending.

The model projects such fundamental information as Year-1 sales as well as concept and product diagnostics. "If the product didn't perform well, [the model] tells us why. We can pinpoint where the problems are — if the color's too dark or the texture's too soft," Pericas says.

The firm also makes use of Nielsen data, although only in hard copy at the moment. Planning is under way for an on-line link that would give marketers terminal access to point-of-sale data.

At Gerber and many other firms, the relationship between IS and market research is friendly but limited.

"When we look at a new system, IS will be involved in the initial stages of introduction," Pericas says. IS makes the recommendations for hardware and software. "They'll come out with a proposal. Once the system is running, we do the rest."

John Hancock's Vanecko *sees vendors playing a big role*

But according to John Kraley, Gerber's MIS director, marketing will be seeing more of IS before long. "We have an excellent working relationship with the marketing groups, and we have plans to further automate them," he says. For example, a project is now in the feasibility stage for designing and populating databases to be accessed by Metaphor, an icon-driven marketing analysis package from Metaphor Computer Systems, which runs on top of IBM's DB2 relational database.

Although the IS department at Campbell helps load the syndicated databases obtained from vendors such as IRI and Nielsen and aids in tasks such as local-area network installation, the market research group creates and maintains its test, sales analysis and historical databases itself, looking to its vendors for programming expertise, Nelson says.

James Vanecko, director of consumer marketing at John Hancock Financial Services in Boston, also sees vendors filling most of marketing's needs. "Product marketers look for specialized vendors that do what they do well," he says. "Internal IS are operations people. Traditional approaches are not appropriate."

Using PCs, marketers at John Hancock download information from the corporate customer database, which is monitored by IS, into Harte Hanke's PCIS, which allows them to do English-language queries on the data. Geodemographic information is blended with customer information via a PCIS interface with Equifax Marketing Decision Systems' Infomart system. The integrated approach allows marketers to better analyze the features and benefits of new products, Vanecko says.

Get it together

Integration is, however, one area where, at most firms, IS has plenty of room to expand its involvement with marketing systems. Integration of internal and external data resources is the next major push for many forward-thinking companies.

"We work closely with IS, but it depends upon what we're doing," Cadbury Beverages' Nyce says. "One of our challenges is that the systems and data we use are out of house. The big issue right now is when or if to bring them in-house."

At Ocean Spray, Tarsa is even more definitive about the need for integration. "The next step in leveraging all the data at our disposal is to integrate the information in our databases," he says. That process has already begun, with the integration of grocery store sales data, picked up by IRI's Infoscan, and shipment data.

Quaker Oats' Rubinow, who reports to the vice-president of IS, is moving ahead with an IS plan designed to give marketing the broadest picture. "We're trying to incorporate external and internal data sources with other factors," he says.

"The spokes of the wheel are marketing, financial, sales, manufacturing and logistics," he continues. "Marketing includes external data, such as scanner, demographic, consumer, advertising and promotion data. All come from various sources, and there are integration issues we need to match up."

The combination of internal and external databases will present Rubinow with many different file formats and data languages. "That's the biggest problem," he says. "We have to understand each barrier." As a result, the project will evolve slowly, one area at a time, Rubinow says, and then they'll link them up.

At Gerber, Pericas says a closer working relationship between IS and marketing is possible. "The opportunities are tremendous," he says. "But you need people with technical capability and marketing skills. That's why the two don't mix more often. MIS tends to be very technical. They need to see the broader picture. And marketing needs to better articulate what it needs." •

Keeping your head above water with AI and supercomputers

Data proliferation is both a blessing and a curse in the minds of many marketing professionals, for whom the fear of drowning is a common sensation. "There's so much data you can't keep up with it," Campbell Soup Co.'s Ed Russell says. "We have more analysts, but we're just as far behind. It just multiplies."

New approaches and new technologies are emerging, however, which may serve as water wings for the data-inundated, helping marketers to channel their search and analysis efforts more effectively and crunch information more efficiently.

Benn Konsynski, a visiting professor at Harvard Business School in Cambridge, Mass., sees embedded artificial intelligence as the key to effective "environmental scanning." By identifying and monitoring key indicators such as advertising initiatives, buyer conditions and affinity products, companies can stay a step or two ahead of market conditions, Konsynski says.

However, there is a catch. An adaptive and sophisticated search mechanism is needed to pinpoint those kinds of market changes and that, Konsynski says, probably means AI. "More and more, AI is being incorporated into these systems. The key is to minimize false positives and negatives," he says.

A related approach, "data refining," is gathering adherents among some far-seeing firms, says John Clippinger, director of the multimedia text technical group at Coopers & Lybrand's Advanced Technology Group in Boston. This approach weds data from internal databases as well as internal and external systems to better identify market opportunities.

To consolidate these enormous, often untidy databases and relate their information, some companies will soon be using very high-performance supercomputers, such as those provided by Cambridge, Mass.-based Thinking Machines Corp., Clippinger says. "This is becoming more and more feasible now. The computing power is available as is the storage capacity."

That fact has not escaped the notice of Thinking Machines, which is currently experimenting with software capable of improvisational grouping of customer records. "If you predefine market segments, most computers are pretty efficient at deciding which bucket to put them into," says Jim Bailey, director of marketing.

But more accurate profiles might be created by the ability to tell the computer to find categories without prior criteria. "First, it will randomly pair records and decide if they're similar," Bailey says. "Gradually, larger and larger groupings will evolve."

BARBARA FRANCETT

Baseline: The census

The common denominator for the demographic and segmentation systems that market researchers consider so essential for targeting new markets and new product opportunities is none other than the national census. By all accounts, the standard of the decennial Census of Population and Housing will rise to even loftier heights over the next decade as information of unprecedented breadth and depth emerges from the 1990 count.

"All data starts with the census. It's the only true national base of information," says Eric Cohen, director of the Marketing Information Products Division at CACI Marketing Services in Fairfax, Va. CACI provides demographic information in a variety of formats — such as age by income, age by sex, in a housing profile, in an Hispanic profile — including a clustering system called the Automated Classification of Residential Neighborhoods, or Acorn. Acorn uses 49 variables to group people into 44 homogeneous groups.

Beginning next year, 1990 census data — including the long-awaited summary tape files — will be delivered during the following three years, Cohen says.

"The [summary tape files] are the 'good stuff,' such as age, income, housing and education," he explains. The tape files offer greater subject detail than that found in the printed reports the government offers. The first summary tapes, which will be released on a state-by-state basis, are expected to be available to the public by mid-1991. For the first time, census information will be available on CD-ROM as well as computer tapes.

Market researchers can also look forward to using updated files from the Census Bureau's Topologically Integrated Geographical Encoding and Referencing, or Tiger, System, a digital map-based file containing detailed geographical data from which the bureau produces maps of the U.S.

"This is exciting because it's never existed before," Cohen says. "It takes every geographic area boundary and digitally encodes it onto tape."

Tiger is a breakthrough, Cohen says. "Everybody will be working with the same information. It breaks the country down much more minutely than ever before. The entire country will be broken down into blocks, the smallest areas for which data is produced, whereas in the 1980 census, large rural areas were unblocked. This means the data can be used to target customers more accurately."

BARBARA FRANCETT

Pump up the volume

Sales and marketing executives say their departments' need for IS services will grow during the next two years

Source: CW Survey — CW Chart: Paul Mock

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Cutting back costly shelf tests

Marketers add systems to repertoire to help reduce time, costs

BY SUSAN KERR

Jello-O Pudding Pops looked like a winner of a product when Michael Duffy and his fellow managers at General Foods Co. first ran a computer simulation to test its potential. But there was no way the company was going to release the product without first getting confirmation from actual test marketing. "We didn't trust the numbers, so we also did test marketing," Duffy says, who today is a marketing manager at A. C. Nielsen Co. in Northbrook, Ill.

What General Foods used to come up with its initial projection on Pudding Pops was a simulation program from Hendry Corp. The program ran on a mainframe and combined a mathematical theory of marketing with what Duffy calls "concept of market structure."

The firm tried to build a hierarchical model similar to an organization chart. The tricky part, Duffy says, was trying to use equations based on assumptions to describe the market. In part, this entailed making assumptions about product preferences and then trying to quantify and represent the changeability of those preferences and what factors, such as coupon offers, were most likely to effect a change.

As it turned out, full-blown test marketing of Pudding Pops confirmed the outcome of the simulation — the frozen dessert had all the earmarks of a hit.

This kind of on-target analysis of product prospects is making computers a much more integral part of major marketing decisions at large consumer-goods companies. Even so, Duffy says, few companies are ready to entrust information systems with the full weight of a product introduction decision. It's a question of confidence, he explains: "There's nothing there that I can really sink my teeth into as to why [the numbers] are right. I can believe it when I talk to 350 people, and they tell me why they like a product."

> "THE OLD DAYS of running a test market in Peoria for a year are over."
>
> JOHN D. C. LITTLE
> MIT

Nevertheless, computer-driven modeling and simulation is taking on greater importance as time becomes an increasingly precious commodity.

Changes in the marketplace and in the distribution chain have brought a greater emphasis on speed and efficiency in product testing. Life cycles of products are shortening because competitors are becoming increasingly adept at copying successful ideas. An adjunct to this is that being first in the market traditionally translates into better sales than the me-too products.

"The old days of running a test market in Peoria for a year are over," says John D. C. Little, a professor at MIT's Sloan School of Management in Cambridge, Mass. "In the year it would take [to run a test market], competitors would put on a crash program and start a rollout of their own."

From art to science

Some technology-driven services have emerged in the last decade that claim to make test marketing a more precise science, capable of producing better and faster answers.

One is a service called Behaviorscan, run by Chicago-based Information Resources, Inc. (IRI). IRI has carefully profiled approximately 3,500 participants in each of six small cities and given them identification cards. These cards are scanned

Continued on page 104

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Marketing is sold, but not satisfied

BY CAROL A. COULTAS

When it comes to information systems, marketing directors make savvy, demanding consumers.

"We've got to find some way to slice and dice the tremendous amount of information out there," says Michael Patrick, senior manager of market analysis at S. C. Johnson and Son, Inc., the makers of Johnson Wax products, in Racine, Wis. "The ideal system would allow us to do the filtering of information and then to format and graph it in such a way that our marketing decisions are made obvious."

James McCarter, director of marketing at Freedom Forge Corp., a steel company in Burnham, Pa., has his own ideas about an ideal system — born mostly out of frustration with his current data retrieval system, which he says is inflexible and not user-friendly.

"I hate it," he says. "If someone were to ask me what our sales are like in the Chicago area, I would have to go in and start sorting data from the Chicago area. It could be done, but it would take a lot of time to do it."

Tailor to fit

Although James Morgan, senior vice-president of planning at Philip Morris U.S.A. in New York, says that he's very satisfied with his company's current marketing information system, the variety of software capabilities can seem daunting. "It's well presented," he explains, "but when you deal with sales figures, there are 87 different ways to present the data. That's a living experiment. We just keep tweaking the system."

Tailoring information sys-

Philip Morris' Morgan *considers marketing a 'living experiment'*

tems to marketing needs, which are both very specific and very changeable, is an ongoing challenge — but one that is key in maintaining a competitive edge, according to marketing executives.

McCarter, for example, notes that his company is making improvements in systems for forecasting and reporting a major goal for 1991, particularly in the sales and marketing departments. "We're getting our customer files better organized," McCarter says. "Right now, forecasting is a little like Johnny Carson playing Carnac. Once we're better organized, we expect a higher degree of accuracy."

Patrick envisions a system that would allow S. C. Johnson to track not only its own products but also those of competitors or potential competitors. To illustrate his point, he uses a hypothetical situation in which his company makes razor blades but wants a system that provides data on men's skin treatment products — shave creams, colognes and hand and body lotions.

"Some categories, such as hand and body lotions, may be growing at a higher rate than others," Patrick explains. "And we'd want to look at segments within those categories, such as dry skin products. There may be an opportunity to supply a product of our own that meets a consumer need."

McCarter also believes that having access to information about his firm's competitors would provide Freedom Forge with an important edge in the marketplace.

"If you have information that shows a competitor's customer gets a product in eight weeks, and your lead time is 12 weeks for the same product, that's a pretty valuable piece of information," he says.

At K Mart Corp., information about competitors is integrated with demographics to help form a basis for making marketing decisions, according to Ron Gellish, general manager for corporate research and planning at the Troy, Mich.-based retailer.

"We maintain a database of our competitors' information so we can identify where our competitors are opening and closing units," Gellish says. "We use that information to analyze the impact on our business."

Gellish acknowledges that K Mart's information system is already fairly comprehensive but says that it still doesn't provide one particularly useful marketing tool — the actual demographics of the firm's customer; that is, who bought what item and at what price.

"We can look at a demographic area and see that within a five-mile radius around a certain store, the population is 90% white and 10% black and get an income profile and the number of kids," he explains. "But it's a leap of faith to say those are the people who are bringing all those widgets through the registers."

Joyce Ravid

S. C. Johnson's Patrick *needs a way to prioritize and segment market data*

Gellish notes that a retailer such as Sears, Roebuck and Co. can get that sort of information by analyzing customers' department credit-card use. Lacking its own credit card, K Mart relies instead on demographics and external market research companies such as A. C. Nielsen Co.

"If Nielsen says, according to its database, K Mart has 10% of the market for records, tapes and compact discs, then we'll look at our own sales data and see if there are areas where we fall below or far above the market," Gellish explains.

Nielsen is also providing information in hard copy from thousands of household "panels" who keep diaries to record purchasing patterns. K Mart is exploring the possibility of establishing an electronic linkup with the Nielsen panels to make that information more accessible.

They see the edge

Although marketing managers are not always perfectly satisfied with the information systems in place to support them, they don't underestimate what computer technology has done and can do to advance their companies' marketing efforts.

Several marketing directors contacted by *Computerworld* refused to discuss their use of IS, saying they were fearful of revealing strategies to their competitors.

Furthermore, in a *Computerworld* survey conducted earlier this year, 85% of the managers in user departments — including sales and marketing — agreed that information systems are the key to competitive advantage in the 1990s. •

Coultas is a free-lance writer in South Harpswell, Maine.

Continued from page 100

at each grocery store visit, thus supplying IRI with an accurate list of purchases. IRI has run 20 to 25 tests in each Behaviorscan market. More than half have been new product tests.

Part of Behaviorscan's appeal is its ability to monitor each participating family's cable television viewership and direct different advertisements at individual homes. IRI then shows the affect of different marketing strategies for new products.

A test using Behaviorscan costs anywhere from $50,000 to $300,000, not including advertising, according to Bob Bregenzer, an IRI senior vice-president.

Scanner strategy

Recently, Nielsen embarked on a different technology strategy by providing 15,000 households across the country with their own handheld scanners. After returning from a shopping trip, a household member scans all the Universal Product Codes of purchased items. Once every few weeks, he calls up Nielsen and downloads the scanner information by phone lines to Nielsen's IBM mainframe. As part of their total test marketing strategy, this gives manufacturers a more geographically dispersed picture of what types of people buy particular products.

Mall interviews have long been a staple of market research and a fast means of getting some reliable information on product potential without resorting to an actual shelf test. Here, too, computers are beginning to play a bigger role. Mall testing typically works by having researchers go into selected shopping arcades and ask several hundred people what product characteristics they'd like or show them real products and get their views. In some cases, shoppers are sent home to use the new item and are called later for their opinions.

Answers gathered by researchers always eventually wind up being fed into a computer for analysis. What's new is that personal computers are now being placed on-site at the malls. This summer, The Bases Group in Cincinnati started equipping

Duffy *says computers helped Pudding Pops lick the market*

its interviewers with PCs. Previously, paper responses were shipped to Bases and keypunched, according to operations vice-president Christine Adams. Now, project time has been cut in half by having either the disks mailed or data downloaded via modem to Digital Equipment Corp. VAXs. Adams adds, "We believe we'll save significant money once [the systems are] up and running." The savings should come from reducing or eliminating printing costs, shipping costs and the double checking of numbers, she says.

Consumer responses

Another approach tried by some companies is to allow the consumers to key in their own computer responses. Several marketers say they believe this approach is less fruitful, however, because interviewers are more adept at flushing out good information from respondents.

Interactive PC graphics will soon allow manufacturers to test concepts more easily without the product in hand, says Rashi Glazer, assistant professor at the University of California at Berkeley's Walter A. Haas School of Business. In another year, he predicts, potential consumers will be shown computer-based images of products from which they can pick out features they like. This would save companies the time and money of making real mock-ups or prototypes.

In the meantime, others are working on different ways to attack statistical modeling. Little, for example, is reassembling old test data to answer questions such as: If the price were different, would the product do better? Using data models collected over three years on the buying habits of specific households, he is constructing models that will attempt to help predict the best way to introduce products in the future.

Test marketing, in the sense of controlled introductions of products in selected and measurable markets, will probably never be totally replaced. As Glazer notes, "The cost of being wrong is so much more expensive than test marketing."

There is, however, little doubt that in the future, computers will have a bigger say — not only in what gets to store shelves, but also what products should be subjected to good old-fashioned test marketing. •

Kerr is a free-lance writer in Los Altos, Calif.

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Let's take a look at what makes SQL/DS Version 3 the best DBMS for users of the VM and VSE operating systems.

Standards

In addition to the high performance and robust features that serious database applications require, SQL/DS has three features that are essential to implementing the most important information architecture of this decade—distributed computing. These features work together to provide an excellent environment for implementing distributed applications.

The first feature is SQL/DS's adherence to international standards for SQL as expressed by the American National Standards Institute (ANSI), the International Standards Organization (ISO) and the Federal Information Processing Standard (FIPS) 127.1. FIPS has created a test suite so vendors can measure how close they come to the SQL specification. Version 3 Release 2 of SQL/DS easily passes this test. SQL/DS even provides a "FIPS flagger" program to help users identify SQL statements failing to comply with the FIPS standard.

The second important feature is SQL/DS's participation in SAA connectivity using Advanced Program to Program Communication (APPC). This communication standard simplifies building cooperative processing applications with SQL/DS. In particular, APPC makes it easy to use SQL/DS as a database server in client server applications. In this style of distributed computing, the DBMS provides intelligent access to the data for client applications running on remote computers. These remote computers can be other mainframes, but more and more they are PCs with a graphical user interface such as OS/2 Presentation Manager.™

Not only do IBM's applications such as QMF use SQL/DS as a server, but third-party products are being used as front ends to SQL/DS to build applications. Independent software vendors are also attracted by the large installed base of SQL/DS users.

Distributed Data Bases

The third feature needed for effective distributed processing is support for distributed databases: the ability to access data at multiple sites, including locally, in a transparent fashion. One benefit of a distributed database is that local data can be retrieved without any network activity, thus reducing communications costs when compared with a centralized database at a single remote site. Another potential advantage is that each database node can be appropriately sized to the amount of data, the complexity of user requirements and the number of users. As the system grows, added demand can be met more easily than with a centralized system, by making smaller changes to existing nodes or by adding new nodes to the network.

SQL/DS's "remote unit of work" capability delivers these benefits by allowing a collection of database operations (called a unit of work) to retrieve and update data at a remote site. Future releases of SQL/DS will add support for "distributed unit of work," which allows a single unit of work to access data at multiple sites simultaneously.

Connectivity

Because companies often rely on a variety of operating environments, IBM is committed to extending distributed database functionality. Currently, remote data can be shared among VM SQL/DS databases, and IBM has announced data sharing between VM SQL/DS and DB2 databases. VSE Guest Sharing, using VM TSAF, provides access to local or remote VM SQL/DS databases to VSE users and applications running under VM. IBM intends to add interoperability with AIX,® OS/2 and OS/400 applications and databases as well.

SQL/DS delivers the three keys to implementing distributed processing—SQL standards, SAA connectivity and distributed databases. If you need to solve tough data management problems in a VM or VSE environment, SQL/DS is the obvious choice. Get in on the secret.

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Cyberspace '90

Sci-fi writer William Gibson explores the final frontier: Information

BY WILLIAM GIBSON

I was born in 1948, in the late dawn of the Information Age. I knew environments in which there were no televisions. My childhood was strongly colored by rampant technological optimism and a concomitant undertone of abiding dread. The two poles of the mass imagination were a glittering futuropolis, slick as Johnson's Wax, and the shadows of the nuclear wasteland. I was constantly told by various authorities that the atom would change everything. (Somewhat later, if less officially, I was told the same thing about LSD.)

I saw the world then — much as I see it now — as the ultimate science-fiction scenario. But the science fiction I grew up with was about technology as its makers would have had us receive it. The future would arrive on a stainless platter, probably of Scandinavian design, to be instantly and obediently taken up by Americans of my generation to be, it went without saying, applied to the purpose for which its manufacturers had intended it.

The science fiction I grew up with was seldom about garbage. Nor was it often about the messy and fascinating uses the human animal finds for the things that arrive daily from the uncounted factories of a world that sometimes fancies itself post-industrial. But the stainless platter is gone, replaced by a stream of cardboard-backed bubble-packs. There is no particular end in sight, and the street, home to the messy human animal, persists in finding its own uses for things. (We have it on reliable authority that Colombia'a cocaine barons employ expert systems to route the global flood of their product.)

My own science fiction has tended to be about garbage, the refuse of industrial society. We swim, after all (and sometimes sink) in a sea of the stuff. We also swim, some of us, in largely uncharted seas of information, sustaining the very monsters of my bread and butter: the outlaw hacker and the great big corporation. When I wrote *Neuromancer* in 1983, "hacker" had not yet acquired its current freight of negative-value. Hackers were obsessive, superbright boffins who delighted in worming their way as far into the texture of the emerging data matrix as possible. In fact, they were sometimes the very same techie folk heroes who brainstormed the personal computer into being, and a few of them even managed to become Great (or at least Pretty) Big Corporations in the process. To hack, in the original sense, was not bad; to hack was to *be there*.

Rob Colvin

Be where? Cyberspace. Not the neural-jacked fantasy purveyed in those paperbacks of mine. Rather, in the altogether more crucial version of the concept as currently championed by John Perry Barlow, Mitch Kapor and the Electronic Frontier Foundation: The totality of information existing in the matrix *right now*. Because cyberspace, as I've been muttering for years, is already here. Or rather, we are already there and have been for some time.

> I SAW THE WORLD then — much as I see it now — as the ultimate science-fiction scenario.

This is difficult for some of us to see, likely because we're more used to technologies that open pre-existing territories. Cyberspace, in Barlow'a sense, is a territory *generated* by technology. As such, the "territory" itself is subject to constant growth and permutation — a cybernetic Wyoming writhing in some eerie interstice between concept and silicon. Yet this territory is certainly real because we can be rousted by the Secret Service for crimes alleged to have been committed there.

The electronic frontier

And now, teetering on the brink of a new world order/chaos theory, apparently having arrived just in time to describe the global political situation, we are told that virtual reality technology is about to change everything. The video helmets and data gloves of virtual reality are our hot tickets to the future.

But the future has junkyards, where one day even the hottest machines must be left out in the rain to rust. All technology eventually gathers dust. What matters is territory, and in its generation of territory, the advanced technology of information is unique. The territory is there now, awaiting partition. Fascinating as the potentials of virtual reality may be, I'm more impressed by Kapor'a metaphor of the electronic frontier.

Cyberspace today seems just that, a virtual frontier sparsely inhabited by technical pioneers — loners, visionaries and even outlaws — all of whom are willing to live off the land. Both the hacker and the corporation (let us include governments and military entities) have been aware of the territory, in some sense, from the beginning — the hacker, by nature of his being, and the corporation, by virtue of its need to define itself.

The first hackers were — in many instances and quite literally — creators of

---

Gibson is author of *Neuromancer, Count Zero, The Mona Lisa Overdrive* and *Burning Chrome*. He is a winner of the Hugo and Nebula Awards for science-fiction writing.

the territory they explored, and as such, they had a certain edge. But the railroad is no doubt on its way, in the form of the Great Big Corporation, and with it will come what my colleague Bruce Sterling has called the planned development of hyperreal estate. The proto-hackers of the 1970s may one day be remembered as cybernetic mountain men, the earliest settlers in a landscape long since dominated by data malls and information megamarts.

Or perhaps I'm merely being romantic; perhaps the mall, the dominant structure of our economy, is already firmly in place. In the data mall, the majority of users go about their business in the most ordinary way. Most, in fact, are as yet unaware of the mall itself and see only their own specific destinations and the functions they must perform there.

Amid these good and ordinary folk of Cyberia, however, there may sometimes be found exceptions: spies, vandals, voyeurs, terrorists, artists and combinations thereof.

But these others have one thing in common, if nothing else: They are aware that there *is* a mall. (Though our data mall currently differs from the concrete and glass model in one minor but perhaps crucial specific: Scattered amid the chain stores and fast-food franchises are meeting places of an almost European intimacy, nonprofit hangouts of hair-down boho splendor. These are bulletin boards, and our "other users" are prone to spend a good bit of time there.

Myself, I'll stick with garbage because my real business has less to do with predicting technological change than making evident its excesses. I'll stick with the poetry inherent in reels of magnetic wire recordings, rusting under a sun-faded card table at a California swap meet. We may not actually recall the machines required to summon voices from these brittle yards of steel, but there's an appealing melancholy in the fact that the vendor is unaware that these *are* recordings. All those voices. Other days, other days.

And one day our floppies will be there by the millions, warping and gathering dust, not to mention that svelte laptop you've just decided on.

But meanwhile, I'd advise those of you so inclined to definitely go West. It's either El Dorado or a shopping mall — same as it ever was, somehow. •

Linz, Austria/ Vancouver, B.C.
September 1990

The Difference Engine

An excerpt from Gibson's and Bruce Sterling's new book gives glimpses of life in high-tech, 19th-century London

What if the Information Age had begun in the Victorian Era — and Charles Babbage perfected his mechanical computing engine before the development of electronics?

In their forthcoming novel, William Gibson and Bruce Sterling depict a London of 1855 that is both familiar and much changed. Steam-powered Babbage engines are run by an elite group of "clackers." Every man and woman has a government-issued number. Paleontologist Edward Mallory's discoveries made him a sure bet to join the ruling savants.

"Do you like your work, Mr. Tobias?"

"Pay's not much. Gaslight ruins your eyes. But it has advantages." He shrugged again and pushed his way through another door into a clattering anteroom, three of its walls lined with shelves and card files, the fourth with fretted glass.

Behind the glass loomed a vast hall of towering engines — so many that at first Mallory thought the walls must surely be lined with mirrors, like a fancy ballroom. It was like some carnival deception, meant to trick the eye — the giant identical engines, clock-like constructions of intricately interlocking brass, big as railcars set on end, each on its foot-thick padded blocks. The whitewashed ceiling, thirty feet overhead, was alive with spinning pulley belts, the lesser gears drawing power from tremendous spoked flywheels on socketed iron columns. White-coated clackers, dwarfed by their machines, paced the spotless aisles. Their hair was swaddled in wrinkled white berets, their mouths and noses hidden behind squares of white gauze.

Alex Waterhouse-Hayward

Gibson: *Back to the future*

Tobias glanced at these majestic racks of gearage with absolute indifference. "All day starin' at little holes. No mistakes, either! Hit a key-punch wrong, and it's all the difference between a clergyman and an arsonist. Many's the poor innocent bastard ruined like that . . ."

The tick and sizzle of the monster clockwork muffled his words.

Two men, well-dressed and quiet, were engrossed in their work in the library. They bent together over a large square album of color plates. "Pray, have a seat," Tobias said.

Mallory seated himself at a library table, in a maple swivel chair mounted on rubber wheels, while Tobias selected a card file [and] retrieved a pair of cards. "Were these your requests, sir?"

"I filled out paper questionnaires. But you've put all that in engine-form, eh?"

"Well, QC took the requests," Tobias said, squinting. "But we had to route it to Criminal Anthropometry. This card's seen use — they've done a deal of sorting work already." He rose suddenly and fetched a loose-leaf notebook — a clacker's guide. He compared one of Mallory's cards with some ideal within the book with a look of distracted disdain. "Did you fill the forms out completely, sir?"

"I think so," Mallory hedged.

"Height of suspect," the boy mumbled, "reach . . . Length and width of left ear, left foot, left forearm, left forefinger."

"I supplied my best estimates," Mallory said. Tobias plucked up the cards, dropped them through a slot and pulled a bell rope. There was a sharp clanging. In a moment a clacker arrived for the cards.

"Now what?" Mallory said.

"We wait for it to spin through," the boy said.

"How long?"

"It always takes twice as long as you think," the boy said, settling back in his chair. "Even if you double your estimate. Something of a natural law."

■

Tobias lowered his voice. "Truth to tell, sir, you could pay a commoo magistrate, or even his clerk, and have this intelligence for a few shillings, under the rose. Once you've someone's number, the rest is simple enough. It's a common clacker trick to read the engine-files on someone of the criminal class — they call it 'pulling his string,' or being 'up on a cake.' "

Mallory found this news of remarkable interest. "Suppose I asked for my own file?" he said.

"Well, sir, you're a gentleman, not a criminal. You're not in the common police files. Your magistrates, and court clerks and such, would have to fill out forms and show good cause for the search. Which we grant easily."

"Legal protocols, eh?" Mallory said.

"No sir, it's not law that stops us but the simple trouble of it. Such a search consumes engine-time and money, and we're always over budget in both. But if an M.P. made that request, or a Lordship . . ."

"Suppose I had a good friend here in the Bureau," Mallory said. "Someone who admired me for my generous ways."

Tobias looked reluctant and a bit coy. "It ain't a simple matter sir. Every spinning-run is registered, and each request must have a sponsor. What we did today is done in Mr. Wakefield's name, so there'll be no trouble in that. But your friend would have to forge some sponsor's name, and run the risk of that imposture. It is fraud, sir. An engine fraud, like credit theft or stock fraud, and punished just the same, when it's found out."

"Very enlightening," Mallory said. "I've found that one always profits by talking to a technical man who truly knows his business. Let me give you my card."

Mallory extracted one of his Maull & Polyblank cartes-de-visite from his pocketbook. Folding a five-pound note, he pinched it against the back of his card and passed it over. It was a handsome sum. A deliberate investment.

Tobias dug about beneath his apron, found a greasy leather wallet, stuffed in Mallory's card and money and extracted a dog-eared bit of shiny pasteboard. J. J. TOBIAS, ESQ., the card said in grotesquely elaborate engine-Gothic. KINOTROPY AND THEATRE COLLECTIBLES. There was a Whitechapel address. "Never mind that telegraph number at the bottom," Tobias told him. "I had to stop renting it."

"Have you any interest in French kinotrophy, Mr. Tobias?" Mallory said.

"Oh, yes, sir," nodded Tobias. "Some lovely material is coming out to Montmartre these days."

"I understand the best French *ordinateurs* employ a special gauge of card."

"The Napoleon gauge," Tobias said readily. "Smaller cards of an artificial substance, which move very swiftly in the compilers. That speed is quite handy in kino-work."

"Do you know where a fellow might rent one of these French compilers here in London?"

"To translate data from French cards, sir?"

"Yes," Mallory said, feigning an only casual interest. "I expect to receive some data from a French colleague, involving a scientific controversy — rather abstruse but still a matter of some scholarly confidentiality. I prefer to examine it privately, at my own convenience."

"Yes, sir," Tobias said. "That is to say, I do know a fellow with a French compiler, and he'd let you do whatever you like with it if the pay were right. Last year, there was quite a mode in London clacking circles for the French standard. But sentiment has turned quite against it, what with the troubles of the Grand Napoleon."

"Really," Mallory said.

Tobias nodded, delighted to show his authority. "I believe it's felt now, sir, that the French were far ahead of themselves with their vast Napoleon project, and made something of a technical misstep!"

Mallory stroked his beard. "That wouldn't be British professional envy talking, I hope."

"Not at all, sir! It's common knowledge that the Grand Napoleon suffered some dire mishap early this year," Tobias assured him, "and the great engine has never spun quite properly since." He lowered his voice. "Some claim sabotage! Do you know that French term, *sabotage?* Comes from *'sabots,'* the wooden shoes worn by French workers. They can kick an engine half off its blocks!" Tobias grinned at this prospect, with a glee that rather disquieted Mallory. "The French have Luddite troubles of a sort, you see, sir, much as we once did, years ago!"

Used by arrangement with the authors from their forthcoming Bantam book to be published in March 1991.

Our man in cyberspace checks out virtual reality

Inside the goggles, you're a cartoon character for an hour

BY JIM NASH

It was like a dream, but electronic, like television. I was flying above a kitchen that I somehow knew was mine, though it resembled no room I had ever floated above. A big blue hand hung in front of my face and arthritically mimicked every movement of my own right hand.

I turned my head and saw that the room stood roofless and alone on a vast, unmarred plane. Hungry, I floated down to the kitchen floor and opened the white refrigerator. No peanut butter, cold chicken or beer. My head began to itch, and my eyes ached. This was becoming a nightmare. But even nightmares are usually more comfortable than this.

This was virtual reality — the sensual computer illusion forecast by William Gibson and other science-faction authors. In Gibson's books, this electronic hallucination is called cyberspace. In my book, it's like being a cartoon character for an hour.

In real reality, I am at VPL Research, Inc. in Redwood City, Calif., which invited me to try out its brand of faux life. As I strapped on a black Lycra data glove, looking like the world'a oldest Nintendo player, Ann Lasko-Harville, VPL's director of product design, explained the basic idea:

Three sophisticated, interactive computer programs, written in Forth, C and Pascal, put users inside a world of computer graphics. This allows users to treat system-generated objects almost as if they were real physical things. You interact with the environment using special clothing and fiber-optic sensors that interpret body positions as computer commands. In theory, a user can create a world limited only by his imagination and programming capabilities.

> I GRINNED, ENJOYING the power, as I realized that I was lord of a completely artificial world that would react almost instantly to my presence.

As I slipped the goggles on, I noticed an ankle-to-wrist lycra jumpsuit on a hanger outside VPL's demonstration room. Complete with fiber-optic piping that looks like something June Lockhart wore to bed in *Lost in Space*, the garment, I learned, is a virtual reality suit. It's designed to translate an average-size person'a body movements into computer commands for a more realistic approach to virtual reality.

The idea is simple: The more the super-sensitive fiberglass is flexed, the less light is transmitted. The computer senses the lost light, then translates it into a movement command. However, not being average size at 6 ft 3 in., I had to settle for the glove.

Cindy Charles

CW reporter *Nash on the trail of a virtual world*

I nodded in understanding while I strapped on VPL's patented goggles, called Eyephones — a combination of twin color-LCD monitors, cushy ear phones and lead weights. The granulated lead, which hangs in a bag at the back of the phones, acts as a counterweight to the monitors.

Resembling a black cyclist'a helmet with front and rear bumpers and weighing as much as two very heavy wet towels, the Eyephone is an interface to be reckoned with. Putting it on is a two-person job; one person pulls apart the headphones, while the other steadies and lowers the bulky Eyephone onto the wearer's head. Wearing it was akin to putting on a welder's mask and a hard hat: You felt secure but a little claustrophobic.

Once you adjust, the resolution is OK, similar to what you would see if you taped a Sony Corp. Watchman to your forehead — but nowhere near as good as your average IBM Video Graphics Array monitor. You can pretty clearly see dots on the screen. The overall effect is a washed-out, shadowy world with a lot of hard angles and no smooth curves.

The glove is connected via a cable to a custom Apple Computer, Inc. Macintosh IIX design/control workstation. The starter setup, called Reality Built for Two (RB²), costs around $45,000 — plus the cost of the requisite advanced graphics workstation at about $50,000 to $100,000.

A whole new world

At first, it's hard to resist the urge to tug on the cable or avoid getting tangled in the bundle that runs between the Eyephone, the glove and the computer — even when you're sitting in a swivel chair.

But once you get past the heavy-headedness and the stifling feeling, life in a computer-generated world borders on realistic. And fun.

Of course, everything is weightless, an odd sensation to those of us who have never been in space. There are no smells other than the stuffy odors of a small office.

Ironically, although I seemed to be wearing blinders, the three-dimensional environment seemed to really exist. I grinned, enjoying the power, as I realized that I was lord of a completely artificial world that would react almost instantly to my presence.

The omnipresent and disembodied hand floating before me is a stylized 3-D representation of my own hand, which is firmly sheathed in the lycra-and-fiber-optic glove. My hand movements are mimicked by the screen hand with a jumpiness and delay like that of a mouse pointer.

Using the glove, it'a possible to "move" in a disembodied fashion by crooking a thumb and pointing in the direction I want to float. I find that I can move, ghost-like, through walls.

Objects created in the application — stove tops, doors, steering wheels — can be moved if they have been programmed with a "hold" command, which allows you to "grip" the thin air and reposition them.

Run wild

During my trip I was transported into several environments. After the kitchen, I found myself in a generic, yellow two-door car. After experimenting a bit, I discovered it was possible to open the door, turn the 10-sided steering wheel and shift gears. The dashboard had all the ergonomics of a covered wagon, but nothing that a little more programming can't fix. Because I, like the car, lacked a body and had no pedals to work, it was impossible to do much more than fiddle with the cockpit controls and watch the idiotically waving dials. Soon, I got bored and turned to the next adventure.

Ahhh. This is much better. Puget Sound, Wash. Crude buildings (including a Space Needle of sorts) loom in the east, a bland strip of land to the west. In between is a placid waterway, complete with a whale and a ferry that crisscrosses the channel. I dive beneath the water.

While the details look more like geometry than reality, the illusion of going under the surface and watching both the whale and the ferry is fun. That'a because a special algorithm helps make the movements a little bit more realistic. Playing tag with the whale is challenging, because the creature gains speed in a Doppler sort of way as it approaches.

After an hour, it is time to come back to my reality. I thank the VPL staff and head back to my office in Burlingame, Calif., to think about what I have seen.

VPL says virtual reality can be used today for viewing architectural models, scientific data, geophysical displays, sales pitches and design prototyping.

For all the good virtual reality might eventually hold for teaching bloodless surgery or accurate engineering, I decide that I prefer real flesh and blood. For now.

Nash is a *Computerworld* West Coast bureau correspondent.

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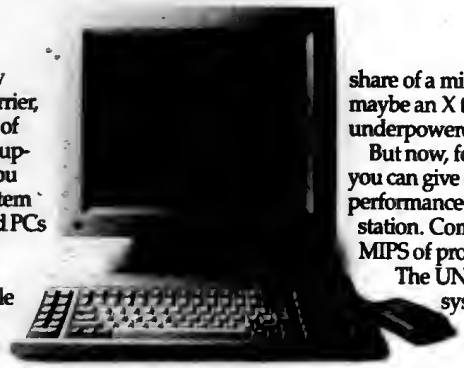

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NATIONAL
BRIEFS

Major shift at DG

Those who wondered what was up at **Data General Corp.** this month when three senior executives dropped from the employee rolls got their answer last week: a reorganization, aimed at speeding DG's return to profits. Under the new order, veteran DG executive **Tom West** will head the Advanced Systems Development Group. **Allan Jennings** will lead DG's Aviion Development Group. **William Zastrow** will do the same for DG. **Peter Gyenes** will head up international operations. **Joel Schwartz** will hold sway over proprietary systems efforts, and **Electronic Data Systems Corp.** veteran **David Jacob** will lead the firm's charge into systems integration.

■

Staying alive

Struggling for survival, San Antonio-based **Datapoint Corp.** released an announcement stating that the firm, aided by financial advisor **Kidder-Peabody & Co.**, "continues to explore [its] strategic alternatives . . . However, there can be no assurance that any strategic transaction will be consummated." Stay tuned.

EDS rides outsourcing to riches

Cost-cutting pitch wins points on executive row, but not always with IS management

BY PAUL GILLIN
CW STAFF

Three years ago, when a major Midwestern manufacturer started work on a new production line, it selected Electronic Data Systems Corp. to handle the factory automation work.

"They were a rather pushy company," remembered the information systems director, who requested anonymity. "They were always trying to expand what they were doing, make contact with upper management and get more business.

"But in the end," he continued, "they threw the resources at the job tn get it done. I would rate myself a satisfied customer — with qualifications."

Hot-and-cold attitudes are not unusual among IS directors who have dealt with EDS. The company has a reputation for relentlessly pursuing new business once it gets inside a customer'a door. But EDS has also won fans in both IS and senior management for the quality of its facilities management work and for generally delivering the cost savings it promises.

Today, EDS appears to be well-positioned to take advantage of the swell of interest in data center outsourcing. "They are in the finest single position of anybody in the industry," said Howard Anderson, president of The Yankee Group, a market research firm.

Observers cited a number of big advantages EDS enjoys: It has 28 years of outsourcing experience and a $127 billion sugar daddy in parent company General Motors Corp., which acquired EDS in 1984 and still accounts for more than half of its $6 billion in revenue. EDS has technology-sharing agreements or equity investments in dozens of vertical market firms. It is still sitting on nearly $500 million in cash with which to finance acquisitions in a depressed stock market. And a recent reorganization has split the company into vertical industry business units, geared to allow EDS tn respond to changes in the market more quickly.

"Competitively, they're an absolute juggernaut," said Stephen McClellan, an analyst at Merrill Lynch Research/U.S.

McClellan rated EDS' stock (GM Class E) a "buy" and forecast 15% annual earnings growth during the next five years. Prudential-Bache Securities, Inc. analyst Charles E. Taylor Jr. rated EDS stock the most attractive of a generally moribund high-tech group right now. The Yankee Group sees EDS revenue approaching $10 billion in 1993 and its GM-derived revenue decreasing to a little more than one-third of total sales, compared with more than half today.

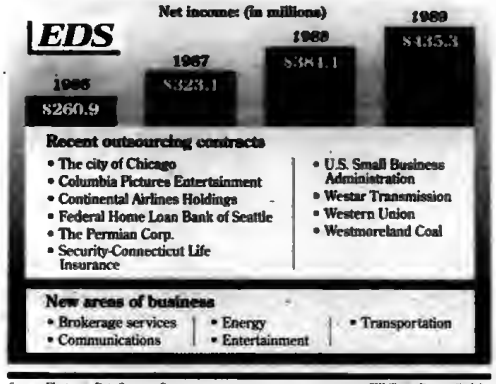
For a company that is still widely viewed as either a government contractor or GM'a data processing department, EDS' list of recent commercial outsourcing deals is long. The crown jewel of 1990 is a 10-year contract to manage the IS operations of the System One airline reservations system. The deal, which is still pending, will generate $4 billion in revenue, EDS estimated. The company has a contract backlog of at least $16 billion.

EDS' success is not necessarily good news to IS directors. Many feel the confidence bred by that success has served to strengthen an arrogant strain that already loomed too large for customer comfort. EDS has historically sold over the IS director'a head, bid-

Continued on page 117

Mining outsourcing's gold

Even as it piles up facilities management contracts, EDS continues to discover new veins of business to explore



Source: Electronic Data Systems Corp. CW Chart: Doreen St. John

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COMMENTARY

Gary H. Anthes

Collaborators with cold feet

Next month, a delegation led by the U.S. Department of Commerce will travel to Tokyo to present the U.S. response to Japan's recent proposal of a Japanese-American-European collaboration in intelligent manufacturing systems. If the tone set at a recent workshop on the topic is any indication, it will be tough going.

More than 100 people from U.S. industry and academia recently attended an informal half-day meeting at the Commerce Department to present their views on international collaboration in advanced manufacturing or, as one official put it, to help decide how to respond to "the wake-up call from Japan." Judging from comments made and not made, it can safely be said that most U.S. companies view intercompany and intercountry collaboration as being a bit like going to the dentist — it's no fun, and you put it off as long as you dare, but eventually you go because you have to.

Suspicion about the idea of getting into the testbed with competitors is natural, and the way the Japanese proposal was first made contributed to the prevalent view that the idea is just another way for Japan to take our ideas and run with them all the way to the bank. Japan's Ministry of International Trade and Development (MITI) originally proposed a 10-year, $1 billion collaboration, with MITI putting up $400 million and Japanese, U.S. and European industries each kicking in $200 million.

The U.S. and Europe looked that gift horse in the mouth, saw too many Japanese teeth and said, "No, thanks." A new proposal from Japan, made in August, suggests equal funding — and, hence, equal control — from the three regions.

An official with the Commerce Department said the Japanese explained the unequal payment idea as simply one of altruism, a way to show gratitude for the Marshall Plan. No one laughed at that, but no one believed it, either. "My greatest nightmare is that we go to all the trouble to set this up, and the Japanese come in and mine it while we stand back and bask in the glow and don't mine it," said Leo Hanifin, director of the Center for Manufacturing Productivity and Technology Transfer at Rensselaer Polytechnic Institute.

Carefully picking the projects on which to collaborate is key to putting together a win-win-win consortium. According to Commerce, Japan spends only 20% of its research and development dollars on basic research and the balance on applied, product-specific research. In the U.S., the numbers are approximately reversed. Balancing and complementing the strengths and weaknesses of each side are necessary to ensure that each party gets to do its fair share of "mining."

Paul Huray, senior vice-president for research at the University of South Carolina, and others suggested that another way to achieve win-win would be to propose projects in areas such as standards and industrial safety.

The Commerce Department says one of the problems with the first Japanese initiative, which bypassed Uncle Sam and went directly to U.S. industry, was that it appeared to be going after superior American know-how in software, artificial intelligence and systems integration technology without an equitable exchange of technologies.

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> RENSSELAER POLYTECHNIC INSTITUTE

But Masahiro Meshii, a professor in the Department of Materials Science and Engineering at Northwestern University, said U.S. industry is too concerned about the loss of basic research knowledge, inasmuch as most of that is available now for the asking from U.S. universities and federal agencies. He strongly endorsed the consortium idea.

One other area of naivete shown by some attending the workshop was an assumption that the U.S. government would substantially fund one or more international technology consortia. In a climate of budget cuts and anti-"industrial policy," there are two chances the government will do that: slim and none.

Mark S. Lieberman, deputy assistant secretary for technology policy at the Commerce Department, will lead the U.S. delegation. He said he's looking for guidance from industry. Comments may be sent to him at the U.S. Department of Commerce, Washington, D.C. 20230.

Anthes is Computerworld's Washington, D.C., correspondent.

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IBM may be on the lookout for new networking partner

ANALYSIS

BY JIM NASH
CW STAFF

IBM and Microsoft Corp. have been together for so long, they share the same toothbrush. But monogamy may be one thing IBM is willing to sacrifice in the name of long-term networking market share.

About a dozen information systems managers contacted by *Computerworld* earlier this month said they believed IBM would be foolish not to consider at least one more solid local-area network partner beyond Microsoft. With about 60% of the LAN installed base sewn up, Novell, Inc. looks like the logical candidate. Novell would in turn gain much from closer ties to the hardware-standards king, the IS managers contended.

Users said they see greater cooperation between Novell and IBM as key to getting greater network interoperability and investment security. Down the line, every IS manager contacted said the warming rapport between the two companies of late is not enough to allay their overriding concern: How to fully connect extremely heterogeneous workplaces.

This concern could account for the optimism with which all reacted to an item in a newsletter published by consulting firm Meta Group, Inc. that predicted the likelihood of a formal agreement between IBM and Novell within the next 60 days. Meta Group analyst Frank Michnoff said he believes there is a good chance that the two will go so far as to staff a joint office dedicated to smoothing barriers between the two companies' product lines.

Rumors run rampant

Terry Bergman, senior personal computer coordinator at Toshiba America, Inc., and Bill Wolfe, president-elect of the Affiliation of Netware Users, said that they have heard rumors to that effect.

"IBM has realized that it's a multiplayer [LAN] game," Bergman said.

Wolfe said that he first heard murmurs of an IBM/Novell pact in 1989. He speculated that IBM may be growing nervous as Compaq Computer Corp. continues to move ahead in the server and workstation markets. He added that he looks forward to seeing IBM sell PCs with Netware already stored on their hard disks to simplify the configuration process.

Darryl Miller, executive vice-president of Novell's marketing and services, did not deny that such a proposition could be in the works. Miller said that while he knew of no such plans, "we always hold out the potential for such relationships."

An IBM spokesman said that specific cooperative agreements on specific products are anticipated, but no broad initiatives were expected. He emphasized IBM's continued support for Microsoft's LAN Manager network operating system, which serves as the core of IBM's LAN Server.

"On a de facto basis, a cooperative agreement already exists," explained Bill Lawrence, network engineer at Southern California Edison in Irvine, Calif.

IBM currently markets Novell's Netware as part of its education-oriented and federal government networking systems. Novell has demonstrated porting Netware for IBM's Application System/400 using the midrange mainframe as a back up for the network. Also, at the Networld '90 Dallas trade show, the Provo, Utah-based company demonstrated Netware running on Officevision.

However, network managers want more. One IS manager said that he has long and reluctantly planned a shift from the Netware network operating system to Microsoft's LAN Manager in order to capitalize on IBM's staying power. Jeff Larimore, IS director at Home Intensive Care, Inc. in North Miami Beach, Fla., said he would abandon those plans if Novell and IBM were more in synch.

He explained that while Novell currently builds hooks into its products that tie into IBM hardware, that effort is not reciprocated. If it were, Larimore said, he could standardize on Novell without worrying about his long-term investment. Larimore runs a 60-user Netware network today and said he expects to add 15 more users in three regional offices in the Southeast soon. Lawrence said he would like to see Novell more fully support IBM's OS/2 Extended Edition, especially the operating system's data manager capabilities.

"For developers, [a closer relationship] would be fantastic," said Todd Booth, senior software specialist at Quotron Systems, Inc. Quotron develops software to deliver financial information to data brokers, most of whom have multivendor networks. "We have to look at what the customers have [installed], and the customers have everything."

Booth explained that he would like to see a new network-layer product from IBM that would accommodate Novell's media-independent Netware. "Maybe LAN Server could support [Internetwork Packet Exchange]," the protocol used by Netware. "Or at least they could come up with a common protocol," he said.

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IBM in the clear — somewhat

Others dissatisfied that Navy was not found unfairly influenced by IBM

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — IBM is off the hook for now on allegations that it unfairly influenced the U.S. Navy's computer procurement process. But the book is not yet closed on the 2-year-old controversy, in which six IBM competitors charged that IBM, the Navy or both acted improperly in steering business to the computer giant.

Also, independent of the specific Navy/IBM case, various federal oversight groups continue to grumble about what they see as an unjustified tendency to award mainframe contracts to IBM at the expense of viable plug-compatible competitors.

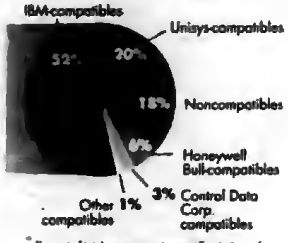
An investigation by the Navy into allegations of unethical conduct in several Navy procurements on which IBM bid found no evidence of wrongdoing on the firm's part.

"My conclusion is that IBM is an aggressive but fair competitor in the federal marketplace," said Rep. Frank Horton (R-N.Y.), a member of the House Government Operations Committee, which had requested the probe.

However, a source close to the investigation said the committee's final investigative report, to be released later this month, will find "a clear intent by the Navy to steer business to IBM." He said the report is likely to say that IBM was not totally blameless either.

Still investigating

Over half of government procurements have been going to IBM, but whether favorites are being played remains to be decided



Percent of total procurements according to type of compatibility (Total: 1.94B)

Source: General Accounting Office CW Chart: Darren St. John

Despite a host of legal requirements for full and open competition, true competition in the federal marketplace for mainframe computers is "a myth," committee chairman Rep. John Conyers Jr. (D-Mich.) charged at a recent congressional hearing.

Conyers said agencies have a knee-jerk tendency to make awards to IBM, unfairly excluding competitors. "We have found that four federal agencies — Health and Human Services, Treasury, Agriculture and NASA — are so heavily dominated by IBM that it must be discouraging for IBM's competitors to even try," he said.

At Agriculture and Health and Human Services, for example, IBM labels hang on more than 80% of the mainframe boxes, according to figures from the U.S. General Accounting Office (GAO).

IBM disputes the assertion that it unfairly dominates, saying it sees greater competition in the government market than anywhere else.

While IBM has about 70% of the worldwide market for large systems, the GAO says that IBM has won only 47% of the large federal system buys over a recent three-year period.

IBM says the reason for its poorer performance in the government is that federal procurements are more driven by price — where the plug-compatible firms such as Amdahl Corp. generally have an edge — than by considerations of service and technology, where IBM insists it enjoys advantages.

An IBM spokesman said that federal computer users and taxpayers will be ill-served if an obsession to find a level playing field results in requests for proposals that are pitched at the lowest common denominator. "If they drop the level of technology to what's already been copied [from IBM by the plug-compatible competitors], lots of companies can bid, but the government will be 12 to 18 months behind on the technology," the spokesman said.

He added that IBM supports a growing trend for agencies to structure procurements to favor greatest value rather than lowest price.

However, clearly the shoe smarts when it is on the other foot. IBM recently protested an $841 million computer award by the U.S. State Department to Wang Laboratories, Inc., saying the competition was stacked unfairly in Wang's favor in various ways. The assertion is hard to prove or disprove, but a State Department official recently told *Computerworld* why the agency is dominated by Wang gear: "We bought Wang equipment years ago when they had the best word processing capability. We continue to buy it for compatibility reasons and because they give us superb service."

The GAO's figures showed that 82% of all mainframe procurements limit competition in some way. Based on a sample of mainframe buys totalling $1.9 billion, 52% specified IBM compatibility, and of those, IBM won 65% of the awards.

Milton J. Socolar, a GAO official, said agencies sometimes have legitimate reasons for limiting competition, as when a large installed base of software mandates compatibility. But he also said GAO had found examples "where competition was limited by a desire to expedite the procurement process or deliberately favor a particular vendor."

> "WE HAVE FOUND that four federal agencies — Health and Human Services, Treasury, Agriculture, and NASA — are so heavily dominated by IBM that it must be discouraging for IBM's competitors to even try."
>
> REP. JOHN CONYERS JR.
> D-MICH.

Elmer Clegg, vice-president for federal operations at Amdahl, said the Navy has made improvements in its procurement processes recently, strengthening procurement management and oversight, appointing a procurement ombudsman and improving systems specifications in requests for bids. "Overall, in the past 12 to 18 months, we've gotten a good shot at the procurements the Navy has put on the street," he said.

However, Clegg added that he still sees "pockets of IBM bias in the Navy and elsewhere in the U.S. government."

New hands on deck at consortium helm

BY SALLY CUSACK
CW STAFF

AUSTIN, Texas — Sematech, a research and development consortium composed of 14 major U.S. semiconductor manufacturers and the U.S. Department of Defense, has named William J. Spencer as its new president and chief executive officer.

Spencer, a group vice-president and senior technical officer at Xerox Corp. in Stamford, Conn., succeeds the late Robert N. Noyce, who headed the consortium from July 1988 until his sudden death last June.

Spencer will direct Sematech's advanced semiconductor manufacturing staff and will also serve as the consortium's primary liaison to its member companies and the government.

Sematech defines its mission as providing the U.S. industry with the domestic capability for world leadership in semiconductor manufacturing. Member companies include: Advanced Micro Devices, AT&T, Digital Equipment Corp., Harris Corp., Micron Technology, Hewlett-Packard Co., IBM, Intel Corp., Motorola, Inc., Rockwell International, NCR Corp., National Semiconductor, Texas Instruments and LSI Logic.

Sematech's Spencer

Other members of the executive suite include Turner E. Hasty, chief operating officer, and Peter H. Mills, chief administrative officer.

Prior to Xerox, Spencer held research positions at Bell Laboratories and Sandia National Laboratories. He was research professor of medicine at the University of New Mexico's School of Medicine and received his Ph.D. in physics from Kansas State University.

> SEMATECH DEFINES ITS mission as providing the U.S. industry with the domestic capability for world leadership in semiconductor manufacturing.

As a consortium, Sematech is working to change national attitudes toward manufacturing by partnering with U.S. universities and research institutions to foster fresh, new ideas and expose academia to opportunities in the manufacturing sector.

EXECUTIVE CORNER

Parallan invites new CEO to guide firm to profitability

William B. Patton, the executive who guided **MAI Basic Four, Inc.** from losses to profits while increasing its profits almost 100% to $450 million, is the new chairman and chief executive officer at **Parallan Computer, Inc.**, in Mountain View, Calif. Parallan Computer makes and markets OS/2-based servers for use in client/server computing. Its executive team, which includes co-founder, President and developer **Giancarlo Ratazzi**, is hoping to leverage Patton's long-term industry experience and reputation for customer focus.

Cambridge, Mass.-based **On Technology, Inc.**, purveyors of applications software for the Apple Computer, Inc. Macintosh, has a new president: former marketing Vice-President **Conall Ryan**, who coordinated the rollout of On Technology's maiden product. Ryan joined the firm last year, following a stint as marketing manager at Next Computer, Inc. He succeeds On Technology co-founder **Mitch Kapor**, who will stay on as chairman.

Twenty-five-year computer industry veteran **J. Carl Masi** has been named vice-president of corporate marketing at **Unisys Corp.** Masi, 49, is a former International Data Corp. chief executive officer; prior to that, he spent 12 years serving Wang Laboratories, Inc. in a variety of senior management positions.

Maxtor Corp. has named **Albert J. Moyer** to the newly-created position of president and chief operating officer at the San Jose, Calif.-based disk drive company. Moyer, an electronics industry veteran, most recently served at Western Digital Corp., where he was senior vice-president and chief financial officer.

EDS

CONTINUED FROM PAGE 113

ding to take over the entire data center, said Rich Schmitt, president of Schmitt Consulting Group, Inc., a St. Louis-based outsourcing consultant. "EDS traditionally has wanted all or nothing," he said.

As a result, "Most IS managers I've dealt with who have worked with EDS have had a negative experience," said Richard A. Katzman, a New Cumberland, Pa.-based consultant who specializes in outsourcing advice. Employees who do not like the high-pressure culture they encounter when they transfer to EDS have no choice but to leave, he said.

EDS officials said they are trying to change the company's hard-bitten image, and they have won some admirers. "EDS has a very progressive set of career opportunities for their people, particularly their technical people," said John L. Torres, vice-president of The Ledgeway Group, a market research firm based in Lexington, Mass.

The company spends more than $100 million per year training its 60,000-employee work force. Its Systems Engineer Development program is so expensive that employees are required to reimburse the company if they leave within three years after completing the 10-week course.

IS managers will probably be hearing a lot more from EDS if the outsourcing trend builds as expected. EDS has used a pile of cash generated by the steady and profitable GM revenue stream to fund a distinctive contracting style: When the firm signs a pact to manage a data center, it also often buys an equity stake in the customer's firm. This allows EDS to gain vertical market footholds while simultaneously winning new business.

EDS paid $250 million for a 50% stake in Texas Air Corp.'s System One in February before signing the $4 billion outsourcing agreement [CW, Feb. 26]. Early last month it bought a stake in Westwood Equities Corp., a financial services firm, and signed a contract for an unspecified amount to run IS for Westwood's operating subsidiaries. Last year, it acquired a 20% equity stake in Hitachi Data Systems Corp. while picking up a deal to run the mainframe maker's North American IS.

EDS Chairman Les Alberthal calls the equity investment strategy merely a customer-driven change in the contracting process. "[Customers] want to take something out of that [data processing] investment that they've spent 30 years putting money into," he said.

It is also a way for EDS to pick up vertical market expertise that it can leverage elsewhere. For example, EDS officials said that the more than 8,000 employees it absorbed in acquiring and consolidating GM's data processing centers gave it manufacturing expertise it could never have acquired otherwise.

"We've had a cram course in manufacturing over the last six years," Alberthal said. That experience has helped EDS win business from such companies as Caterpillar, Inc., Cummins Engine Co. and Hoechst AG of Germany. It also led EDS last month to take an equity stake in Ask Computer Systems, Inc., a developer of manufacturing software [CW, Sept. 17].

Market watchers say that the risks for EDS are fairly small. The firm has a big head start on its direct competitors, said several analysts, and its market is growing fast enough to give everyone a piece of the action.

The most immediate threat to EDS' success is probably its own aggressive expansion, Torres said. "As you expand, your ability to manage consistently becomes much more of a challenge," he said.

EDS also needs to trade in its reputation for targeting only top management for a gentler image that stresses flexibility and accommodation to the customer's needs, analysts observed. EDS officials said that this year's multifaceted campaign to gain expertise in new vertical markets is part of an effort to do just that.

INTERNATIONAL

BRIEFS

Philips slashes

The latest move in Dutch electronics giant **Philips N.V.**'s multiphase effort to boost itself back to the black side of the ledger and into a more competitive stance vis-a-vis its Japan rivals by cutting loose its unprofitable computer operations will be the layoff of 4,900 computer-related employees, the firm announced last week. According to recently appointed Chairman **Jan Timmer**, who is bidding to be the architect of Philips' reconstruction, the information systems division cut is one stage of a probable 10,000-person layoff anticipated as required for the firm's recovery.

■

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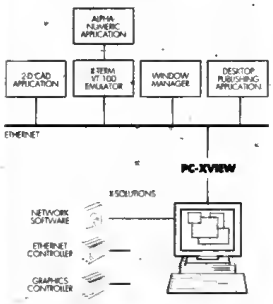

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IS banking careers feeling the squeeze

BY CONNIE WINKLER
SPECIAL TO CW

The actor's lament, "Don't call us, we'll call you" is proving just as accurate for the banking industry, which is in a state of high economic drama.

Indeed, at the end of first-quarter 1989, the commercial banking industry held 1,526,255 full-time employees; at the end of first-quarter 1990, that figure stood at 1,507,413, according to the FDIC Quarterly Banking Profile. What this translates to is about 18,842 layoffs or jobs slashed through attrition.

Since the first quarter of this year, thousands more bank employees have suffered similar fates. Although data couldn't be located on the number of information systems employees affected, recruiters and consultants report a rather bleak outlook for the industry.

"It's not a pretty picture for banking, what with the rest of the financial world sprawled all over the mat," says Chick Bisberg, president of Two-Party Systems, a recruitment firm in Livingston, N.J. "I'm hearing from senior-level IS managers who were unceremoniously dumped into the marketplace because of cutbacks, mergers or whatever the euphemism [the company uses is]."

The situation is especially painful for the IS professional whom the headhunters label "plain vanilla." Bisberg offers little hope for IS managers with generic management backgrounds: "They've done a solid job for 20 to 25 years, and suddenly they're without prospects."

These plain vanillas — mostly middle-aged, middle managers who have only worked on mainframes in the banking industry — are paying for the huge upheavals now facing the financial arena. It's an industry reeling from the savings and loan crisis, the stock market and real estate crashes and banking industry cutbacks and consolidations.

Curiously, the savings and loan defaults have had a lesser impact on IS employment: The thrifts frequently ran smaller systems and were always short on IS help anyway, employment experts say.

Bleeding nation

Most of the nation's leading banks, ranging from Chase Manhattan in New York to Bank of Boston and Bank of New England in Boston, have already had major employee layoffs. Even banks experiencing no cutbacks in IS are affected: Employee morale is low, and less work gets done because employees spend a lot of time trying to divine the meaning of the top manager realignments at many institutions, employees at several large banks report.

Nowhere is the upheaval greater than in the Northeast — particularly in the Boston and New York headquarters of the nation's biggest banks and financial institutions.

IS employees whose jobs are "safe" are nonetheless suffering the ramifications, salarywise. Even though it's good news that these people still have jobs, they can expect only slight salary improvements, says Roger O'Connor, senior consultant at Edward Perlin Associates, a management consulting firm. Banks are implementing major cost-cutting programs and have a surfeit of job applicants.

While opportunities are close to zero for some, the job scene improves dramatically if employees have strong technical skills, according to employment specialists contacted nationally. Demand is high for technical expertise in workstations and interfaces, the C programming language, Unix, Microsoft Corp.'s Windows, computer-aided software engineering tools and expert systems.

The most sought-after expertise, recruiters say, is in local-area network management, especially connecting networked personal computers to other systems. At one Wall Street bank, an office automation manager hired LAN administrators one year ago for $35,000 to $40,000; this year, the starting salary is $55,000 to $60,000. Suddenly, LANs have the blessing of senior IS management, the manager reports. "Until now, IS got away with thinking of PCs as toys. When they're networked, in order to function effectively, the LANs have to be institutionalized," the manager says.

Suzanna Opper, a consultant in New York who specializes in work-group computing, recommends that IS employees take time to get some LAN experience. After that, she advises them to move into other LAN jobs with greater opportunities outside of the banking industry. "The realistic financial services people I know are looking to move out," she adds.

Oldies show

One hidden area of opportunity is what John Heckers calls the "oldies but goldies." This means knowing how to use systems that are not trendy but are still being used because management can't afford to replace them, says Heckers, the founder and president of JWJ Consulting, Inc. in Denver, which fills jobs in mainframe shops. Programmers just want to learn and play with the newest toys and products and then move on, he says, but firms are stuck with old systems now more than ever.

While the East Coast and the Sunbelt are no longer the promised lands, recruiters report that they're having better luck placing IS professionals in the Midwest — Illinois, Ohio, Wisconsin — and California, particularly in Los Angeles.

However, relocation is no longer the salvation that it seemed to be in the 1970s and 1980s. An increasing number of firms refuse to pay the average $15,000 that it costs to relocate a family. Likewise, individuals are hesitant to take on that risk themselves. People now ask themselves, "What's the downside if things don't work out at the new assignment?" Bisberg says.

Winkler is a free-lance writer based in Seattle.

Two steps back

Hard times in banking and financial industries hits salaries, too

	1989		1990	
Average salaries	Banking	Securities	Banking	Securities
CIO/VP/Director of IS	$87,818	$83,311	$77,463	$78,404
Project manager	$50,950	$55,615	$49,281	$49,250
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Source: CW Salary Survey

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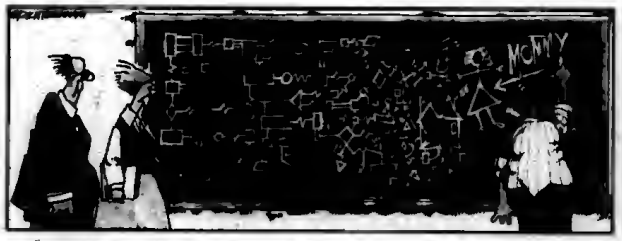

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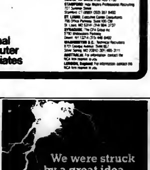

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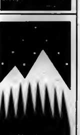

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Data Processing

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Software Engineer - 40 hrs./week, hours: 7:00 A.M. - 4:00 P.M., $35,000 per annum. Develop computer code that will facilitate users to formulate real-time data, display it on a laptop computer and save the data for post-processing; develop computer programs allowing users to create graphs of automotive information with curve fitting; develop software that ultimately creates Lotus compatible spreadsheet files, using MS-DOS operating system and Microsoft "C" language. Must have a Masters of Science Degree - Electronics/Computer Control. 1 (one) year experience as a Software Engineer. Employer Paid Ad. Send resumes to 7310 Woodward Avenue, Room 418, Detroit, Michigan 48202. Reference No. 63280.

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Research and Development Engineer to conduct research in graphics engine design, computational geometry, fractal geometry, linear and polynomial regression, smoothing and prediction of data, curve and net fairing, and computer-based representation, analysis and synthesis of two-dimensional and three-dimensional geometric objects, spline curves and surfaces, nonlinear splines. Other responsibilities will include developing better and faster algorithms so that different geometric entities (Lines, arcs, curves, and surfaces, etc.) can be displayed on different output devices, e.g. VGA monitor, 8514A & Aurora graphics board; produce statistical algorithms and C code to generate line charts, bar charts, pie charts, area charts, hi-lo-close charts, scatter charts, etc., in the windows environment. Salary $32,900 per year/40 hour week. Requirements: Ph.D. or D.Sc. in Mathematics and Systems Science. Extensive knowledge and experience in approximation theory of functions, differential geometry, linear & nonlinear systems, and especially numerical skills also required. Resumes to: Mrs. Jimmie Gaston, ALC Specialist, Job Service, 505 Washington, St. Louis, Missouri 63101. Refer to Job Order #414975.

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Data Processing

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Primary responsibilities will include providing technical support to our marketing effort and serving as a consultant to our customers, designing and implementing printing systems solutions in a variety of software and hardware environments; preparing analysis of customer printing needs; verifying connectivity options; preparing sample print applications, serving as technical focal point in customer presentations.

The ideal candidate will have a degree in computer science and a broad range of knowledge or experience in mainframe environment (IBM MVS-JES2, JES3, VM RSCS, DOS/VSE POWER), applications software (DCF, GDDM, SAS, CICS), data communications (VTAM, NCP SNA/SDLC, BSC), networks and peripheral hardware. AFP experience would be an asset. Prior experience with Xerox Electronic Printing Systems a plus.

Xerox can offer you an excellent salary and a comprehensive benefits package. Xerox also provides a progressive marketing and technical training program. For prompt, confidential consideration, please send your resume with earnings history to: **Hiring Center Manager, Xerox Corporation, Western Region, 1851 East First Street, Suite 1500, Santa Ana, CA 92705.** Xerox is an equal opportunity employer.

The only thing more impressive than the project itself is the opportunity it creates.

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Once online, the AEgle-General Ledger system will give each of our divisions more direct control over their financials, substantially enhancing their efficiency and competitive edge.

At the heart of this system is the general ledger application package of Walker Interactive Software and our own advanced large scale IBM mainframe environment. Our team of dynamic professionals, committed to the use of emerging technologies, will lead the project.

To make the most of our investment, we're expanding our team with professionals fluent in the use of Walker Interactive Software and experienced in large scale projects.

Systems Advisors/ Senior Software Consultants

You'll participate in the technical design aspects of the project, analyzing and testing the Walker system to determine the best system solution to our business specifications.

To be considered, bring us at least five years' experience with Walker Interactive Software general ledger applications.

Senior Analyst Programmers/Specialists

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Common to all positions is the need for technical proficiency with VSAM, CICS, COBOL, JCL and VM, an appropriate college degree, strong analytical, interpersonal and communication skills, and the ability to work as part of a close knit team.

Significant sign-on bonuses, full relocation expenses, highly competitive salaries, exceptional benefits and a state-of-the-art environment are all possible for the best and brightest. If you'd like to be considered, contact us today. Send your resume to: David Brogan, YF56, Financial Staffing, Dept. 3726A, Aetna Life & Casualty, CityPlace, Hartford, CT 06103. Your reply will be acknowledged and held in strict confidence. Principals only; no phone calls, please.

Aetna

Aetna is an Equal Opportunity, Affirmative Action Employer.

"Computerworld is our primary source to find the right pool of top technical talent."

Bill Young
President
Bill Young & Associates

For over a decade, Bill Young & Associates of Fairfax, VA, has been providing cost-effective contingency and retained search services to companies nationwide. With a client base of small, mid-sized and Fortune 500 companies, the firm specializes in recruitment for data processing, engineering, communications, consulting, manufacturing, financial services and defense. On-site consulting and complete administrative/office support placement are offered by other company divisions as well. As explained by President Bill Young, they have a product to sell — and that product is people.

"I consider myself to be a technical talent scout. Every year we talk with over 50,000 professionals. Of those, we actively work with about 10 percent — the 5000 or so top candidates. Our job is to identify the best qualified, the cream of the crop. Here, Computerworld *serves as a valuable tool in helping us find top talent for new openings — and new openings for available talent.*

"The initial and most immediate goal of our recruitment advertising is to fill requisitions for existing positions. Computerworld *is our primary source to find the right pool of top technical talent. And, with* Computerworld, *we also get a secondary residual value that's difficult to measure. As a direct result of our recruitment advertising in* Computerworld, *we've gotten specific retainers with new client companies — plus secondary referrals up to 12 and 18 months later.* Computerworld *definitely gets us talking to the right people.*

"Because Computerworld *is the pulse of what's going on in the industry, the right people take notice. So when our recruitment advertising appears in* Computerworld, *we know we're telling the right people about our full-service package that encompasses everything from initial screening and resume preparation to travel arrangements, relocation issues, salary negotiations — even personnel practices and outplacement.*

"Looking ahead, we hope to expand our search service into the global marketplace. When the time is right, we'll be counting on Computerworld *to help Bill Young & Associates target international recruitment prospects as well. As long as we're in the business,* Computerworld *will always hold a prominent position on our recruitment advertising schedule."*

Computerworld. We're helping serious employers and qualified information systems, communications and PC professionals get together in the computer community. Every week. Just ask Bill Young. For all the facts on how *Computerworld* can put you in touch with qualified personnel, call your local *Computerworld* Recruitment Advertising Sales Representative today.

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Chicago: 10400 West Higgins Road, Suite 300, Rosemont, IL 60018 (312) 827-4433
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An IDG Communications Newspaper

STATE OF IDAHO DEPT OF LAW ENFORCEMENT

Assistant Director Information Systems Division

The Department of Law Enforcement has an immediate requirement for a hands-on Administrator with an extensive Public Safety and/or Law Enforcement background in a large mainframe DP operation. Our environment is a cluster of VAX VMS 6320's with WANS, LANS, on-line/real-time message switching, records management data bases and office automation applications serving a network of over 300 terminals and 150 plus PC's located in criminal justice agencies throughout the State of Idaho.

Responsibilities include overseeing the total needs assessment of the data center, long range planning, computer center design and construction as well as systems and network planning, design, development and procurement. Successful applicants must pass an extensive personal background check and polygraph examination.

Please forward your resume and salary history to the Idaho Dept of Law Enforcement, Dept JB, P.O. Box 55, Boise ID, 83707 to arrive not later than: 11/30/1990.

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Successfully providing software services and technology to Fortune 500 MIS departments and government organizations requires a SMART approach.

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As a dynamic, entrepreneurial company, we value top quality, experienced professionals interested in an excellent salary package, company-paid benefits, training programs and on-going growth potential. For immediate consideration, please call this week at 313/540-4440 or write:

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The City of Austin, Texas is expanding system development teams for their financial and public utility systems. Austin, the State Capitol of Texas, has a population of approximately half a million people, and an annual budget nearing a billion dollars. Austin is located in the central Texas hill country on the Colorado River.

We are seeking Programmers and Analysts with a minimum of 2 years in a high volume, mainframe (MVS/XA) environment with experience in any of the following areas.

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Job #56030-0050EF

AMS-LGFS/GFS Financial/ Accounting Packages
Job #56020-0020EF

Minimum qualifications include a Bachelor's degree in Computer Science, Management Information Systems, Business or related field, plus experience in computer programming and analysis of software in a mainframe environment. Some positions may require supervisory experience.

Applications/resumes must be received in the Employment Office no later than Friday, October 26, 1990. Submit to: CITY OF AUSTIN, Human Resources Dept., Employment Office, P.O. Box 1088, Austin, Texas 78767. Please include job number with application/resume.

Equal Opportunity Employer M/F/H

DB2 SYSTEMS PROGRAMMER

Nebraska Methodist Health System has a challenging opportunity for an experienced DB2 Systems Programmer in our Systems Software Unit.

The successful candidate will have primary responsibilities for the installation, maintenance and support of the DB2 software and all associated systems software. You will also assist in promoting an awareness of the capabilities and benefits of DB2.

This position requires:

- Several years experience with DB2 systems programming
- DB2 Performance tuning experience
- Working knowledge of DB2 structure, flow and logic
- Working knowledge of DB2 security structure and backup/recovery
- Database management experience including IMS/DB
- Strong analytical and problem solving skills
- Strong written and oral communication skills
- Demonstrated ability to manage complex systems software projects.

We offer a competitive salary and benefit package which includes dental insurance. If you are interested in this opportunity please call 402-390-8834 or send your resume to:

Sarah Minarick
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EOE

ORACLE DATABASE ADMINISTRATOR STUDENT INFORMATION SYSTEMS UNIVERSITY OF CALIFORNIA, DAVIS

To effectively manage the SCT/ORACLE database, the DBA will control the installation of the new system, determine access, proportion resources, guarantee security, monitor resource usage, provide consultation and assistance to users, and oversee conversion and adaption of the new SCT software onto the hardware platform.

Requires strong experience in the management of a large scale ORACLE database and proven expertise in new system development. Knowledge of Student Systems Applications desirable.

Salary negotiable, based on qualifications and experience.

Submit a letter of interest, resume and the names and telephone numbers of three references to James H. Abele, Associated Director, Administrative Information Systems, University of California, Davis, Davis, CA 95616 by November 5, 1990.

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- Requires 6 years experience in configuration and environmental planning, installation, vendor coordination, and problem resolution for IBM mainframe and I/O equipment or plug compatible equivalents in a large multi-CPU Multi-Vendor computer center
- Communication equipment experience preferable
- Knowledge of the most current IBM mainframes, IBM I/O equipment, and plug compatible equipment available

MVS SYSTEMS PROGRAMMER

- Requires 2-3 years experience installing purchased packages with:
  — Software installation using SMPE
  — CA Products to include: CA1, CA7, CA11 or ACF2
- Experience supporting programmers, operators, and end users

NETWORK MANAGEMENT SUPPORT

- Minimum of 8 years experience with SNA
- College degree/or equivalent experience required
- Proven skills required:

— VTAM/NCP Dump Debugging
— VTAM/NCP Trace Analysis
— VTAM/NCP Control and Flow
— VTAM Programming
— LU 6.2 Development Experience
— 3745s, Token Ring
— Network Performance Tuning
— Network Management Tools use and/or development: Netview or Netmaster

Make the right move for all the right reasons! Qualified candidates should send a resume to:

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USAA Building
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Attn: Employment & Placement/SD/TLL/CW
FAX: (512) 498-1489

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For Class I Midwest Truckload Carrier. Leading edge technology AS400 B60, Satellite communication with fleet, Electronic Data Interchange, and Interactive Voice Response systems. Requirements: 2 to 3 years experience on System 36 or AS400. RPG III and CLP, and minimum 2 year degree. Send resume and salary history to: **MIS Director, Munson Transportation, N. 8th St. Rd., Monmouth, IL 61462.**

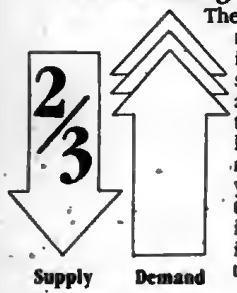
A few important tips on recruiting computer professionals

Finding computer talent isn't as easy as it used to be. In fact, there was a time when you'd just run an ad in the local newspaper and you could make a hire without waiting too long or spending too much.

But times have changed. And like so many facets of today's business, so has the effectiveness of traditional recruiting methods.

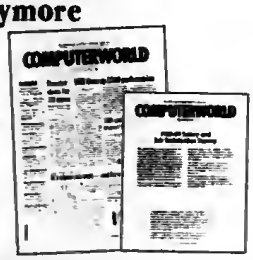
What's more, many of today's recruiters *don't use* today's most efficient methods — methods that save time and money for some widely unknown reasons.

The supply of qualified professionals isn't meeting demand



The American Council on Education reports that the number of college students choosing computer careers is down two-thirds since 1982. To make matters worse, there are more computers in today's business that require the skills of this shrinking market than ever before. And while you may never consider the company next door your competitor, it likely *is* competing for the same computer talent today. The result is a classic supply/demand problem that isn't changing for the better -and that's sure to make your recruiting tougher in the '90s.

Ads in local papers don't reach your major hiring market anymore



That's because they generally reach "active" job seekers — those who actively seek out the local newspaper to find jobs — and who a recent *Computerworld* job satisfaction survey found to represent 2 in 10 of today's computer professionals. The study also found that 7 in 10 of today's computer professionals are "passive" job seekers — those who would *consider* new job options, but likely never look for them in the local newspaper. (The remaining small percentage are "non-movers" content with long-term jobs.)

For every 10 of today's computer job seekers . . .
2 are Active
7 are Passive
1 is a Non-mover

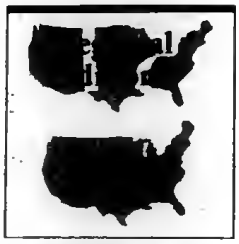
In short, this means that your ad in today's local newspaper reaches no more than 20 percent of today's computer job seekers. What's worse, if you're not using other vehicles that reach far more job seekers, your local newspaper expenses are as inefficient as their limited audience.

More job seekers see your ad in Computerworld than in any other newspaper — Sunday, daily, or trade

That's because *Computerworld* reaches over 612,000 qualified computer professionals every week — the largest audience of its kind, and one that's rich with passive and active job seekers.

That's why more companies advertise more jobs in *Computerworld* than in any other professional newspaper. And why *Computerworld* is the *single place* where America's computer professionals *expect* to see the most jobs every week.

Computerworld gives you regional editions



A key option when you need a regional candidate and want to avoid national response and relocation. Yet if your search is national in scope, *Computerworld* can also give you more widespread national exposure than any other source.

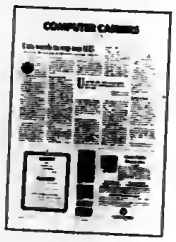
Computerworld needs just 3 working days for your ad to appear

That's comparable to most local newspapers. And why your ad can quickly appear in the next issue to start generating quality response.

Computerworld costs no more than local papers

And with a regional line rate of just $10.80, your cost-per qualified candidate reached is better than *any* newspaper - Sunday, daily or trade. Or just about any other source, for that matter.

Computerworld leads candidates to your ad



Just look at this week's Computer Careers section. You'll find a career editorial topic that will stir the interest of virtually any computer job seeker — passive *or* active. It's just one of countless reasons *Computerworld* is America's newspaper of choice on computing. No matter how much the times change.

And while times may change, some things won't. Whether you *use* computers, *make* computers, or sell products and services *for* computers, *Computerworld* is still your major source of news today. And your major source of computer professionals tomorrow.

For more recruiting tips, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

Weekly. Regional. National. And it works.

"We'll be running a regular recruitment advertising schedule in Computerworld to get the results we need."

— Steven Tully
President
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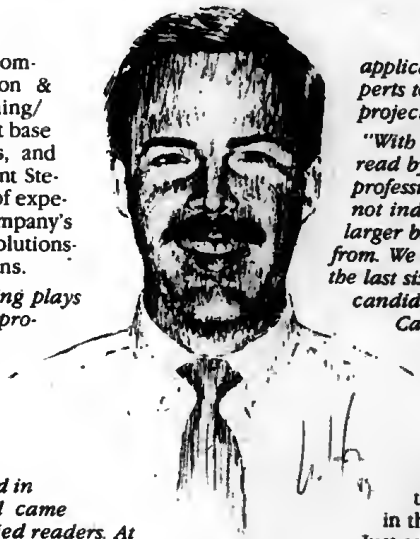

A custom software development company in Norcross, GA, Brannon & Tully, Inc provides contract programing/consulting services to a diverse client base of Fortune 500 companies, utilities, and communications companies. President Steven Tully knows that building a staff of experienced professionals is key to the company's ongoing success in developing solutions-based software for specific applications.

"Because our recruitment advertising plays a vital role in finding the seasoned professionals Brannon & Tully needs, we have to expect one thing. Results. That's why Computerworld *is the only trade publication we use for recruitment advertising.*

"Of the over 50 professionals we hired in the past 18 months, over one-third came from Computerworld's *pool of qualified readers. At our present growth rate, we're expecting to double our size in the next 18 months. That means we'll be looking to augment our staff with more and more industry, applications, software, and programming experts to meet the growing demand for greater project diversification.*

"With Computerworld, *we know our ads get read by a very large audience of seasoned IS professionals. Because these professionals are not industry or hardware specific, we get a larger base of qualified professionals to choose from. We also get national reach. In fact, within the last six months alone, we recruited two candidates who moved all the way from California to the Atlanta area.*

"In other words, recruitment advertising in Computerworld *draws bigger numbers.*

Computerworld. We're helping serious employers and qualified information systems, communications, and PC professionals get together in the computer community. Every week. Just ask Steven Tully. For all the facts on how *Computerworld* can put you in touch with qualified personnel, call your local *Computerworld* Recruitment Advertising Representative today.

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Need to send three binders of forms and procedures to a dozen offices and update them every month? Why not put the information on a CD-ROM?

CD-ROMs, short for compact disc/read-only memory, look just like the compact discs that have been sold in record stores for the past five years, except instead of holding digitized music, they store data — and lots of it. A single CD-ROM can hold more than 500M bytes of information.

To get that information off the disc, you need a special CD-ROM drive. These drives look like regular compact disc players, except instead of connecting to your amplifier, they connect over a small computer systems interface to your computer. Most CD-ROM drives cost anywhere from $300 wholesale to $900 retail.

Because the data on most CD-ROMs is arranged according to International Standards Organization standards, you can read most CD-ROMs on different kinds of computers, including IBM Personal Computers, Apple Computer, Inc. Macintoshes and a number of workstations.

For nearly three years, publishers have been using CD-ROMs to deliver 100M-byte databases to the desktop. For example, you can buy a CD-ROM set containing the name, address, ZIP code and telephone number of every person living in the U.S. from Phonedisc USA in Warwick, N.Y.

However, a less visible and potentially more widespread CD-ROM application is to distribute information internally, according to Jeff Casto, who manages retail products at Dublin, Ohio-based Discovery Systems, one of the largest CD-ROM manufacturers in the U.S.

The reason is cost: After spending between $1,000 and $2,000 to make a CD-ROM master, each disc can be pressed for about two dollars. If you are sending out 222,000 pages of text — about the amount a single CD-ROM can hold — the cost of the paper and postage alone far outweighs the cost of the CD-ROM, according to Knowledge Access International, a maker of CD-ROM indexing and retrieval software in Mountain View, Calif. Even if you are only sending out a 300-page binder, it's still cheaper to press and mail a CD-ROM.

Compared with floppy disks or magnetic tape, CD-ROMs offer the advantages of significantly lower failure rates as well as data permanence: The information on a CD-ROM can't be changed, accidentally or otherwise, and it is also safe from magnetic fields and coffee spills.

These days, it's quite easy for nearly anybody to make a CD-ROM. All you do is set up a hard disk with all of the files and directories that you want on the CD-ROM and copy them onto a backup tape. Next, send that tape to a CD-ROM mastering plant. At the plant, the data will be copied off your tape, processed and etched into a glass master. This master is then used to make the individual discs.

But setting up your hard disk — acquiring and arranging the data — can be a time-consuming task. First, you have to get the data on-line. If most of your documents are available only on paper, they will have to be retyped or scanned with an optical character reader.

Top 5 best-selling CD-ROM discs

1. **Microsoft's** Bookshelf
2. **Grolier Electronic Publishing's** Encyclopedia
3. **Microsoft's** Programmer's Library
4. **Bureau of Electronic Publishing's** Between Heaven and Hell II
5. **PC-SIG's** Library

Source: Bureau of Electronic Publishing — CW Chart: Doreen St. John

Next, you must figure out how to organize the data and decide how your users will read the information. For simple applications — having a CD-ROM filled with forms, for example — you may be satisfied just by putting the raw information onto the disc and letting your users copy it off. Most applications, however, will require suitable indexing and retrieval programs that cost $50 to $200 per copy.

Another advantage that companies find with CD-ROMs is their ability to update expeditiously. When a company sends out updated paper pages for a manual or a floppy disk with patches, installing the updates is often so difficult that users simply don't bother. The problem is most severe with technical documentation and procedures, says Richard Bowers, executive director of the Optical Publishing Association in Columbus, Ohio.

With a CD-ROM, instead of sending out updates, you send out new snapshots of the database, each one a complete copy containing every file. Users throw away their old CD-ROM and start using the new master CD-ROM.

Once your users get their CD-ROM drives, a whole world of information literally opens up. Many companies as well as the government are selling massive databases on CD-ROM, many for a few hundred dollars or less. And there are more than a dozen CD-ROMs containing public domain software, fonts, music and images for IBM PCs and Macintosh computers, most costing $50 or less.

For an idea of the information available, request a catalog from the Bureau of Electronic Publishing, P.O. Box 43131, Upper Montclair, N.J. 07043, or call (201) 746-3031. The Optical Publishing Association provides a list of firms and consultants who specialize in helping businesses develop internal CD-ROM applications. The Association can be reached at P.O. Box 21268, Columbus, Ohio, 43221 or by calling (614) 793-9660.

Garfinkel is a free-lance writer and computer consultant based in Cambridge, Mass.

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The BoCoEx index on used computers

Closing prices report for the week ending October 5, 1990

	Closing price	Recent high	Recent low
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XT Model 086	$500	$700	$350
XT Model 089	$550	$725	$400
AT Model 099	$900	$1,075	$850
AT Model 239	$975	$1,025	$700
AT Model 339	$1,025	$1,300	$900
PS/2 Model 30-286	$1,250	$1,300	$1,125
PS/2 Model 60	$1,500	$1,800	$1,400
PS/2 Model 70P	$3,375	$3,400	$3,175
Compaq Portable II	$975	$1,050	$875
Portable 286	$1,275	$1,450	$1,100
SLT-286	$2,500	$2,825	$1,700
Portable 386	$2,700	$3,000	$2,500
LTE 286	$2,100	$2,200	$2,000
Deskpro 286	$1,375	$1,400	$1,200
Deskpro 386/20	$2,900	$3,100	$2,400
Apple Macintosh 512	$375	$775	$275
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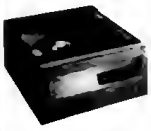

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The power of politics

Enhancing political skills can be a boon to IS managers

BY AVERY CLOUD
SPECIAL TO CW

Is politics a dirty word in your information systems department? It shouldn't be, and here's why.

Politics is the science of self-interest. It is the art of using influence, authority and power to achieve goals. Contrary to what most people think, however, politics is not inherently evil. Political skills, like technical skills, are just a tool for getting things done.

The problem is that political dexterity is not intuitively acquired. Even the brightest, most technically competent professional will have only limited success if he lacks political sophistication. An IS manager, along with everyone else in a company, must develop an understanding of the following concepts before he can wield a political sword:

Influence. Not everyone carries a lot of weight in a company. Respect is earned through social and professional networking, caucusing and so on. Influence can help managers gather voluntary support from the right people, or the right number of people, at the right time.

Authority. This is a valuable tool for any kind of manager because it places the weight of the organization behind his decisions. It is an official sanction that grants control of specific activities.

Power. This is a combination of the authority that is given to a person by the organization and the authority that followers give him by willingly submitting to his leadership.

A good grasp of these concepts can be used to your advantage.

Foul play

The next thing to be prepared for is dirty politics: unethical, illegal or immoral means used to satisfy some self-interest. Dirty politics can also mean the pursuit of some self-interest that is in conflict with the best interests of the company.

IS managers often see what they think is the best way to handle a project get swept under the rug. Why? Because of dirty politics. The solution that the manager thinks is the right one is often forfeited on behalf of some other political self-interest. Without a good understanding of what these self-interests are and how to get around them, IS managers might see outstanding projects crash and burn.

The self-interest stumbling blocks take several forms and all hold their own distinctions:

- **Departmental self-interest.** This might be seen in the department manager who is trying to make his department outshine others. This manager will favor decisions and projects that benefit his competitive agenda.
- **Personal self-interest.** A programmer who is trying to earn a promotion may show more affinity to decisions that will make him more promotable.
- **Corporate self-interest.** The senior executive interested in improving quarterly earnings might wear blinders to achieve this goal, ignoring anything that stands in the way.
- **Group self-interest.** Analysts, for example, might band together on decisions that would affect their position.

Every decision has some effect on, or is in conflict with, at least one of these self-interests. But if an IS professional is armed with influence, authority and power, along with an awareness of the self-interest stumbling blocks, he can take his quest two steps further.

Books for corporate political awareness

Organizations: A Micro, Macro Approach, by Richard L. Daft & Richard M. Steers; Publisher – Scott, Foresman & Co.

A Book of 5 Rings: The Classic Guide to Strategies, by Victor Harris; Publisher – Overlook Press

The Art of War, by James Clavell; Publisher – Delacourt Press

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In Search of Excellence: Lessons From America's Best Run Companies, by Thomas J. Peters and Robert H. Waterman Jr.; Publisher – Harper and Row

CW Chart, Paul Mock

First, he can present each project to the self-interest group in the most nonthreatening manner possible. For example, he can focus everyone's attention on what they will get out of the deal. This way, he will be giving others a stake in the claim. Also, it can't hurt to vigorously market ideas, make decisions by consensus and keep affected parties up to date.

Second, where threat cannot be reduced, the IS manager can lobby for higher support until his decision is pushed through. He can appeal to the power brokers in the institution and use the principle of stakeholdership to gather enough power to overcome resistance.

Political training

An IS manager can play a big part in helping his staff become more politically aware, too. For example, a manager can invite employees to give input regarding decisions that will have a political impact. Managers should frequently and openly discuss the political ramifications of all projects and decisions confronting the department. A manager can use this to illustrate political realities and explain the many nuances of good political planning. Managers can also hold informal classes for their employees on the politics of their organization.

There are many good books, tapes and videos on the market that teach political awareness (see chart). A manager should make these a required part of each employee's annual training activities. He should also include a category in performance reviews that analyzes how well each employee has performed in terms of politics. With this kind of attention paid to political issues, the employee will be encouraged to take it more seriously. Formal education is also available.

While technical skills provide the vehicle for success, political skills grease the wheels. An IS manager should make sure that he and his staff are prepared for all of the twists and turns — and aren't left eating someone else's political dust.

Cloud is manager of technical services in the information services department at Bowman Gray/Baptist Hospital in Winston-Salem, N.C.

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1. Sales through dealers and carriers, street vendors and counter sales	None	None
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D. Free distribution by mail, carrier or other means, samples, complimentary and other free copies	14,021	13,055
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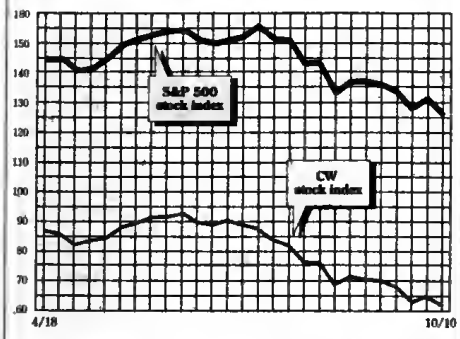

Indexes	Last Week	This Week
Communications	100.9	96.9
Computer Systems	62.2	60.1
Software & DP Services	90.9	86.3
Semiconductors	41.0	36.3
Peripherals & Subsystems	69.5	67.3
Leasing Companies	55.3	53.6
Composite Index	65.0	61.8
S&P 500 Index	131.6	126.9

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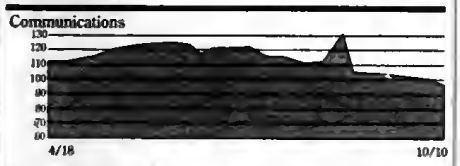

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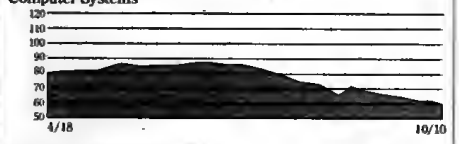

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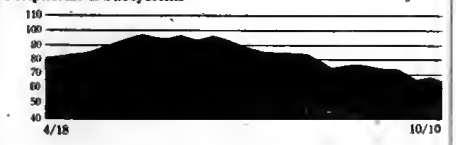

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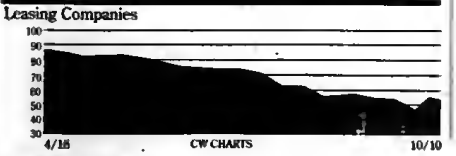

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Communications and Network Services

Exch		52-WEEK RANGE		PRICE CLOSE OCT. 10, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
N	AMERICAN INFO TECHS CORP	68	53	61.875	-0.1	-0.2
Q	ANDREW CORP	26	16	16.5	-1.3	-7.0
Q	ARTEL COMM CORP	10	2	2.375	0.0	0.0
N	AT&T	47	30	31.125	-0.4	-1.2
Q	CANSTEK INC	6	2	1.75	-0.3	-12.5
N	AYDIN CORP	20	11	11.5	0.8	7.0
N	BELL ATLANTIC CORP	57	40	46.5	-1.8	-3.1
N	BELLSOUTH CORP	59	49	50.75	-1.6	-2.9
Q	COMPRESSION LABS INC	16	7	14.5	-0.8	-5.7
Q	CONTEL CORP	36	23	21.75	-1.0	-3.1
Q	DATA SWITCH CORP	4	2	2.875	-0.3	-8.0
Q	DIGITAL COMM ASSOC	27	9	6.25	-5.8	-38.3
Q	DYNATECH CORP	20	13	12.625	0.1	1.0
Q	FIBRONICS INTNL INC	13	6	6	-0.5	-7.7
Q	GANDALF TECHNOLOGIES	6	2	2.375	0.4	18.8
N	GENERAL DATACOMM INDS	6	2	2.375	-0.1	-5.0
N	GTE CORP	36	24	26.375	-1.1	-4.1
Q	INFOTRON SYS CORP	10	3	2.25	0.3	12.5
N	ITT CORP	63	42	42.375	-4.3	-9.1
N	M/A COM INC	7	3	4.25	-0.1	-2.9
Q	MCI COMMUNICATIONS CORP	49	30	32.5	-0.8	-1.8
N	NETWORK EQUIP TECH INC	34	5	6.5	-0.1	-1.6
Q	NETWORK SYS CORP	15	7	8.625	-0.5	5.5
N	NORTHERN TELECOM LTD	30	21	23.5	-0.6	-2.6
N	NOVELL INC	29	12	21.5	-3.8	14.6
N	NYNEX CORP	92	68	74.125	2.6	3.5
N	PACIFIC TELESIS GROUP	52	36	42.375	-0.6	-1.2
A	PENRIL CORP	6	6	4.875	-1.3	-20.4
N	SCIENTIFIC ATLANTA INC	29	13	12.75	-1.6	-10.8
N	SOUTHWESTERN BELL CORP	65	47	51.73	-1.6	-3.5
Q	3 COM CORP	19	7	7.375	-0.4	-4.8
N	U S WEST INC	41	33	35	-0.3	-0.7

Computer Systems

Q	ALLIANT COMPUTER SYS	6	1	1.8	-0.6	-25.0
Q	ALPHA MICROSYSTEMS	7	1	1.375	0.0	0.0
A	AMDAHL CORP	19	10	11.125	0.0	0.0
Q	APPLE COMPUTER INC	50	36	26.5	-0.5	-1.9
Q	AST RESH INC	26	6	17.25	-0.3	-1.4
N	BOLT BERANEK & NEWMAN	6	4	4.875	-0.1	2.5
N	COMPAQ COMPUTER CORP	68	37	38.75	2.9	8.6
N	COMMODORE INTNL	12	5	6.25	0.9	16.3
Q	COMPUTER AUTOMATION INC	6	0	1	-0.2	15.8
N	CONTROL DATA CORP	22	8	8.5	-0.8	-8.1
N	CRAY RESH INC	61	22	22	-5.5	20.0
N	DATA GEN CORP	16	4	4.875	0.0	0.0
N	DATAPOINT CORP	6	1	1.125	0.2	19.6
Q	DELL COMPUTER CORP	14	5	8.625	-1.3	-12.7
N	DIGITAL EQUIP CORP	95	47	47	-5.5	10.5
N	FLOATING POINT SYS INC	4	0	1.625	0.0	0.0
N	HARRIS CORP	40	17	17.25	-1.6	-8.0
N	HEWLETT PACKARD CO	52	26	28.25	-2.8	-8.9
N	HONEYWELL INC	112	73	74.875	-7.1	-8.7
N	IBM	122	93	103.5	3.6	3.6
Q	INFORMATION INTL INC	15	6	8.125	-0.1	-1.4
Q	IPL SYS INC	14	5	6	0.0	0.0
N	MAI BASIC FOUR INC	5	2	1.8	-0.3	14.3
N	MATSUSHITA ELEC INDL LTD	172	116	138.125	0.8	0.6
Q	MENTOR GRAPHICS CORP	26	10	10	-0.5	-4.8
N	NBI INC	1	0	0.156	0.0	-17.0
N	NCR CORP	72	53	53.125	-5.4	9.2
Q	PYRAMID TECHNOLOGY	36	14	16.25	-1.4	-8.3
Q	SEQUENT COMP SYS INC	34	13	15.75	1.6	10.5
Q	SUN MICROSYSTEM INC	37	16	17.75	-1.6	-9.0
Q	SYMBOLICS INC	2	0	0.313	0.1	25.2
N	TANDEM COMPUTERS INC	30	10	9.625	-1.6	-13.5
N	TANDY CORP	47	24	25.375	0.3	1.0
N	ULTIMATE CORP	10	3	3.25	0.0	0.0
N	UNISYS CORP	20	3	4	0.0	0.0
A	WANG LABS INC	6	2	3.125	0.0	0.0

Software & DP Services

Q	AMERICAN MGMT SYS INC	20	11	14	0.4	2.8
Q	AMERICAN SOFTWARE INC	16	6	7.625	-0.4	-4.7
N	ANACOMP INC	5	2	1.75	-0.1	-5.7
Q	ANALYSTS INTL CORP	24	10	10.6	0.0	0.0
Q	ASHTON TATE	15	5	6.375	1.1	21.4
Q	ASK COMPUTER SYS INC	10	4	4.625	1.8	27.5
N	AUTO DATA PROCESSING	60	44	47	-1.3	-2.6
Q	AUTODESK INC	60	33	33.5	-4.8	-12.2
Q	BMC SOFTWARE INC	30	16	19.25	-3.5	-15.4
N	BUSINESSLAND INC	12	2	1.875	-0.3	-11.8
Q	COGNOS INC	10	4	5.875	-0.9	-13.0
N	COMPUTER ASSOC INTL INC	17	4	8.25	0.4	7.7
Q	COMPUTER HORIZONS CORP	17	9	11	-0.3	-2.2
N	COMPUTER SCIENCES CORP	59	37	40.5	0.4	0.9
N	COMPUTER TASK GROUP INC	12	8	8.625	-0.6	-6.2
Q	COMSHARE INC	25	14	16	-0.5	-3.0
Q	CORPORATE SOFTWARE	16	7	7.25	-1.8	-19.4
N	GENERAL MTRS (CLS E)	36	24	32.25	-1.5	-4.4
Q	GOAL SYSTEMS INTL	16	10	6.5	-0.8	-7.3
Q	HOGAN SYS INC	7	2	2.625	-0.1	-4.5
Q	INFORMIX CORP	16	6	4.5	-0.3	-5.3
Q	INTELLICORP INC	6	2	2.625	-0.8	-22.2
Q	LEGENT CORP	31	17	17.25	-1.6	-8.6
Q	LOTUS DEV CORP	39	14	15.75	-1.0	-6.0
Q	MICROSOFT CORP	61	35	39.5	-6.3	-9.5
Q	NATIONAL DATA CORP	35	6	6	-0.5	-5.3
N	ON LINE SOFTWARE INTL INC	11	6	6	-0.4	-7.0
Q	ORACLE SYS CORP	188	6	6	0.4	6.7
N	PANSOPHIC SYS INC	16	6	6	-1.3	-12.2
Q	PHOENIX TECHNOLOGIES INC	5	2	1.625	-0.5	-23.5
N	POLICY MGMT SYS CORP	43	30	35.8	-0.6	1.7
Q	PROGRAMMING & SYS INC	25	12	13	-0.3	-1.8
Q	RELATIONAL TECH INC	10	3	6.5	-0.4	-4.2
N	REYNOLDS & REYNOLDS CO	27	13	13.875	-0.6	-4.3
Q	SAGE SOFTWARE INC	16	6	9.875	0.0	0.0
Q	SEI CORP	22	15	15	-0.5	-3.2
Q	SHARED MED SYS CORP	17	12	15.75	0.0	0.0
Q	SOFTWARE PUBG CORP	28	14	15.75	0.0	0.0
N	STERLING SOFTWARE INC	11	6	6	0.3	4.3
Q	SUNGARD DATA SYS INC	26	15	16	1.8	9.1
Q	SYSTEM CENTER INC	25	6	6.5	-0.8	-8.1
N	SYS SOFT INC	26	14	13.875	1.9	-11.8
Q	WORDSTAR	2	1	1	0.2	23.0

Semiconductors

N	ADV MICRO DEVICES INC	11	4	3.875	-1.1	-22.5
N	ANALOG DEVICES INC	10	6	6	-0.3	-4.0
Q	ANALOGIC CORP	11	6	9.25	-1.1	-12.0
Q	CHIPS & TECHNOLOGIES INC	26	7	7.25	-1.3	-14.7
Q	INTEL CORP	52	30	29.75	-3.5	-10.5
Q	MICRON TECHNOLOGY INC	16	7	7.8	-0.3	-6.3
N	MOTOROLA INC	88	52	53	-11.0	-17.2
N	NATL SEMICONDUCTOR	6	3	3.375	-0.8	-12.9
N	TEXAS INSTRS INC	44	24	24.25	-2.6	-9.3
A	WESTERN DIGITAL CORP	13	3	5.25	-1.0	-16.0

Peripherals

Q	ALLOY CORP	3	0	0.5	0.0	0.0
N	AM INTL INC	6	1	1.375	0.0	0.0
Q	AUTO TROL TECH CORP	4	2	2.25	0.0	0.0
Q	BANCTEC INC	24	13	12.75	0.0	0.0
A	COGNITRONICS CORP	6	3	6	1.0	20.0
Q	CONNER PERIPHERALS	31	11	15.625	-1.4	-8.1
A	DATARAM CORP	22	6	6.8	-0.9	-8.4
N	EASTMAN KODAK CO	68	39	39	-2.3	-5.0
N	E M C CORP MASS	7	3	5.625	-0.8	-8.2
Q	EMULEX CORP	6	4	5.625	-0.8	-11.8
Q	EVANS & SUTHERLAND	39	16	21	-0.5	-2.3
Q	ICOT CORP	2	0	0.563	0.0	0.0
Q	INTERLEAF INC	8	3	3	-0.4	-11.1
Q	IOMEGA CORP	8	3	4.375	-0.2	-4.1
Q	MASSTOR SYS CORP	3	1	0.969	0.1	22.2
Q	MAXTOR CORP	17	6	4.75	-1.0	-17.4
Q	MICROPOLIS CORP	10	3	6	0.8	14.3
N	MINNESOTA MNG & MFG CO	91	68	75.875	-2.4	-3.0
Q	PERSONAL COMP PRODUCTS INC	6	4	3.75	-0.1	-1.7
Q	PRINTRONIX INC	16	9	10	-0.2	-2.4
N	QMS INC	21	6	10.125	-1.8	-12.9
Q	QUANTUM CORP	26	9	14.25	-2.3	-13.6
N	RECOGNITION EQUIP INC	9	4	5	-0.1	-2.4
Q	REXON INC	10	4	4.625	-0.3	-6.1
Q	SEAGATE TECHNOLOGY	20	6	6.125	-0.8	-7.8
N	STORAGE TECH CORP	39	11	11.875	-0.6	-6.9
Q	TANDON CORP	4	1	1.625	-0.2	-10.4
N	TEKTRONIX INC	19	13	13.75	-1.1	-7.8
Q	TELEVIDEO SYS INC	1	0	0.219	0.0	-12.4
N	XEROX CORP	67	32	33.25	-1.6	-4.7

Leasing Companies

N	CAPITAL ASSOC INTNL INC	7	1	1.063	0.0	0.0
N	COMDISCO INC	33	16	16.75	-0.1	-0.7
Q	LDI CORPORATION	16	11	10.75	-0.5	-4.4
Q	PHOENIX AMERIN INC	5	3	4.812	0.3	7.0
Q	SELECTERM INC	6	3	3.25	-0.1	1.8

EXCH: N=NEW YORK, A=AMERICAN; Q=NATIONAL

Castaways

Investors ran for the life boats as tech stocks hit rough seas

Grab those life preservers — technology stocks are sinking fast. In tandem with the big dive of the Dow Jones industrial average last week, tech stocks were also swamped with sellers, leaving many firms searching for a safe harbor.

The riptide pulled several bellwether companies under, including IBM, which lost 7¼ points last week to close Thursday at 101. Microsoft Corp. suffered a 6¾-point drop to 58, and Novell, Inc. skidded 5⅛ points to 18¾ by Thursday.

As in past weeks, the software sector showed more promise than other areas. Witness Ashton-Tate Corp. One of last week's few tech gainers, Ashton-Tate surged 1⅝ points to 7¼. Sterling Software, Inc. was also on the rise, edging up ⅜ of a notch to 6½ after strutting increased earnings for its fourth quarter.

Impending financials have some Wall Street watchers casting doubtful glances toward certain companies. Unisys Corp.'s third-quarter earnings projections were lowered recently by Prudential-Bache Securities, Inc., even though Prudential-Bache called the company a good long-term buy. However, Unisys shares advanced ⅜ of a point last week to 4.

Meanwhile, legal battles among semiconductor firms subsided but left stock prices lacking. Motorola, Inc. settled its disagreement with Hitachi Ltd. out of court and then released disappointing profit figures, yanking Motorola stock down 7⅛ points to 53⅜. No winner was declared in the argument between Advanced Micro Devices, Inc. (AMD) and Intel Corp. over rights to the 80386 chip; the case is still in arbitration. AMD lost ⅜ of a point to 4⅛, while Intel tumbled 3⅜ points to 29⅜.

Among long-distance carriers, MCI Communications Corp. fell 1⅞ to 30⅜, AT&T was down by ⅜ of a point to 31⅜, and United Telecom, Inc. slipped 1⅛ points to 26⅞.

KIM S. NASH

NCR's spirit of Cooperation

BY ELLIS BOOKER
CW STAFF

NEW YORK — NCR Corp. last week took the wraps off Cooperation, a distributed, object-oriented software environment for enterprisewide computing.

The arrival of Cooperation is the second major announcement for NCR in the past month. In late September, it unveiled the first systems in a new hardware family to be built exclusively around the Intel Corp. microprocessor family [CW, Sept. 24].

The seven levels of the System 3000 computer family will range from laptops to massively parallel, loosely coupled behemoths composed of thousands of processors that, according to NCR, will be capable of up to 100,000 million instructions per second (MIPS).

The third and final leg in NCR's enterprisewide computer strategy will show its face tomorrow in Boston, when the company will describe a networking and network management scheme that uses the Open Systems Interconnect (OSI) model.

Taken together, the three announcements complete the Dayton, Ohio-based company's attempt to rapidly recast itself from a vendor of proprietary retail and financial systems into a standard bearer for open systems computing in the '90s, analysts said.

First in line

Cooperation is the first implementation of NCR's Open Cooperative Computing Architecture (OCCA), a client/server architecture it unveiled in February. According to NCR, Cooperation will run on Unix, DOS and OS/2 platforms at the client level and on OS/2 or Unix at the server level.

The software received universally high praise from analysts who had seen it.

"It hits all the right buttons," said Stuart Woodring, director of Software Strategy Research at Forrester Research, Inc. in Cambridge, Mass. "It's got open systems, a client/server architecture, object-oriented programming throughout . . . and it works."

However, while he praised Cooperation for its technical merits, Woodring questioned whether NCR, historically a hardware company, will be able to present itself as a credible vendor of software. By analogy, he noted the trouble Texas Instruments, Inc., a semiconductor company, has had in pushing its computer-aided software engineering tools.

Also at issue, according to Woodring, was the relatively hefty price of Cooperation — a couple of thousand dollars per user. "People will think twice or three times before buying an infrastructure product [at that price]," he said.

For the 24-user configuration of Cooperation, the price ranges from $40,000 to $58,000, or $1,700 to $2,500 per user, NCR said.

But Chuck Barney at Workgroup Technologies in Hampton, N.H., said Cooperation, with its promise to provide transparent access to information no matter where it resides in the organization, will have to be sold to "a different audience: decision-makers and executives, not the MIS department."

Barney added, "It strikes me that pricing is a secondary consideration if they can demonstrate [Cooperation's] problem-solving capabilities."

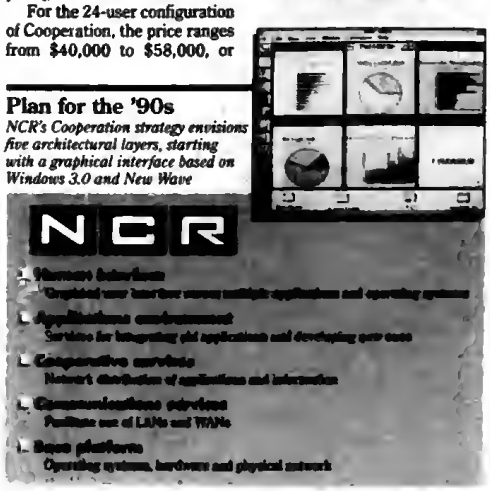
NCR hopes to use Cooperation as an entrance point into the executive suite, later using this to sell its high-performance System 3000 servers and workstations, Barney speculated.

"If NCR makes this work, they'll be No. 2 in no time, and IBM better watch out," said Dick Reddecliff, data processing manager of Sarasota County's MIS department in Sarasota, Fla.

NCR said Cooperation will enter beta testing at several customer sites this month. Availability for Cooperation with OS/2 servers and DOS clients is scheduled for March 1991; general availability of Unix Version 4 servers supporting DOS clients is scheduled for August 1991.

Plan for the '90s

NCR's Cooperation strategy envisions five architectural layers, starting with a graphical interface based on Windows 3.0 and New Wave



CW Chart: Paul Mock

Network edge

On Tuesday, NCR will deliver the third leg of its new computing architecture, a networking and network management scheme called Open Network System (ONS).

According to David Padamore, a partner at Ernst & Young's network strategies consulting group in Fairfax, Va., ONS will run on NCR's recently announced System 3000 hardware platform under Unix and NCR's Cooperation environment. An ONS node can be used either as a multiprotocol bridge router or as a network applications processor, for such services as electronic mail.

ONS will support Transmission Control Protocol/Internet Protocol, OSI, XNS (Xerox's old network protocol, now used in varients by 3Com Corp. and Novell, Inc.) and Digital Equipment Corp.'s Decnet. It will also support T1, Fiber Distributed Data Interface and X.25 transport protocols, as well as Ethernet and token-ring.

Making use of the same object-oriented "encapsulation" technique used by Cooperation to accommodate proprietary sofware applications, an ONS node will be able to handle data traffic using IBM's Systems Network Architecture (SNA) proprietary protocol. Network management will be handled by a new version of NCR's Netmanager software, which already supports LAN and PC management. Netmanager Release 3 will include support for the ONS node.

General availability of the ONS node and the new Netmaster is scheduled for the first quarter of 1991, coinciding with the general release of Cooperation.

OSF outlines pricing for distributed package

BY JOANIE M. WEXLER
CW STAFF

Large user companies and universities that would rather do their own integration of the Open Software Foundation's (OSF) Distributed Computing Environment (DCE), as well as the vendors who intend to support it, now have an inkling of what the price tag will be.

Last week, the OSF outlined the pricing structure for its DCE, a package of operating system- and network-independent integrated technologies announced in May and slated to ship during first-quarter 1991.

Universities may purchase a $5,000 site license, which gives them unlimited copies of source code and object code. For buyers that do not need to redistribute the software — such as companies that would like to study the technology and determine their requirements for their vendors — the cost is $15,000 for a three-copy source-code license. A three-copy license is $60,000 for systems integrators, who will resell the product.

The final cost to end-user companies buying repackaged DCE from vendors cannot be determined until the vendors have ported DCE to their platforms and priced the product. However, according to Jonathan Gossels, OSF's business area manager, a goal of the pricing structure is to allow distributed computing to proliferate, not just to allow deep-pocketed companies to use the technology.

Object-oriented credo praised

It is Cooperation's deep commitment to object-oriented programming that scored the biggest points among observers, who said that while other vendors use the object-oriented metaphor for the visible user interface but employ older, procedural code in the back end, the NCR product scheme extends object-oriented techniques throughout.

NCR said that the object-oriented philosophy, which reuses common pieces of software code across applications wherever possible, has been shown to provide up to 60% improvement in end-user productivity and decrease application development cycles by 70% compared with conventional programming languages.

"This is what IBM should have done with Officevision," said Stuart Woodring, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Indeed, there have been reports that IBM is even now attempting to incorporate object-oriented programming into a number of its systems, including Officevision, AD/Cycle and even Systems Application Architecture (SAA). Woodring said he has heard on the street that IBM would offer an object-oriented SAA language by the end of the year.

Christopher Stone at Object Management Group, Inc. (OMG) in Framingham, Mass., said the object-oriented concept "has been real ethereal for the past year" but that NCR has lent credibility to the approach. "Frankly," he added, "they're one of the first to announce — publicly — but a lot of people are working on it."

NCR is a board member of the OMG, which now claims 90 international software, hardware and end-user members.

Cooperation is composed of 54 software modules, from electronic mail to an SNA APPC developer's kit.

The software consists of five layers (see chart), and applications that do not use object-oriented techniques can be "encapsulated" by the environment, NCR said.

For the user interface, Cooperation has an enhanced version of Hewlett-Packard Co.'s New Wave.

Among the more interesting modules in Cooperation are Workflow Automation, a graphical, object-oriented tool for designing and analyzing complex tasks; and the Business Information Monitor, which NCR bought from Channel Computing, Inc. in Newmarket, N.H., which allows a user to automatically gather data from a variety of sources and display it graphically.

Quake

FROM PAGE 1

last quake, Parady was locked out of the Pacific Stock Exchange building for several days by city officials, who shut off electricity for fear of gas leaks.

Some companies, such as Intel Corp. in Santa Clara, Calif., and Clorox, Inc. — whose Oakland data center was severely damaged — have moved their mainframes out of the most vulnerable areas, citing concerns about earthquakes. American President Companies Ltd., an Oakland shipping firm, is one of several considering the addition of a secondary data center in seismically stable locations — Sacramento in APC's case. The areas most likely to be hit by a major earthquake stretch south from San Francisco to beachside Santa Cruz and extend inland to Berkeley, Oakland and San Jose.

Those who could not or did not want to move the corporate data center spent part of the past year bolting down filing cabinets and anchoring disk drives.

Silicon Valley giant Hewlett-Packard Co. had to close down two buildings for several months after the quake. Now, it is looking for more disaster recovery sites and outfitting computer rooms with rolls of plastic to prevent computers from shorting out if sprinklers are set off. "My gut feeling is that we're taking safety seminars a lot more seriously," said Mary Bechtel, computer operations manager at HP's Palo Alto data center.

Proper testing of disaster recovery procedures, IS managers said, is the only way to plan on continuing operations the next time: "We're going to have a mock earthquake drill this month, complete with an emergency operations center and medical care," said Joe Beaupre, telecommunications manager at Kaiser Permanente, which has a data center in Walnut Creek.

But IS managers in smaller shops find themselves limited in what they can do to prepare for future disasters, other than laying in a supply of folding cots, canned food and water.

"There just isn't any money," said Dave Macdonald, director of data processing for Alameda County, just east of San Francisco. The county, which includes the battered city of Oakland, suffered damage severe enough to close down City Hall — a building that stands empty to this day. Two county workers were among those who died in the collapse of the Cypress overpass on Interstate 880 last year. "The county's priorities are health and police protection," Macdonald said. "When you're laying off deputies and health care workers, it's hard to get another million for DP."

The U.S. Geological Survey (USGS), based in Menlo Park, is telling area residents that there is a 67% chance of another quake of equal or greater size in the next 30 years. "That quake could strike at any time, including today," warned a glossy-paged special USGS report tucked into Sunday newspapers several weeks ago. Scientists do not know whether the next rupture would come on the famed San Andreas coastal fault or the parallel Hayward fault on the inland side of San Francisco Bay.

In anticipation of another large quake, many national and global IS enterprises are quietly planning to take San Francisco out of the loop in nationwide data and voice networks.

"In the last six to nine months, we've seen a focus on alternate network routing," said John Ratliff, senior vice-president at Comdisco Disaster Recovery Services (CDRS) in Rosemont, Ill. "All of the disaster plans got a hard look, with a heavy emphasis on testing [at hot sites]."

CDRS and Sungard Recovery Services, Inc., in Wayne, Pa., which are the two largest recovery firms, reported an increase in satellite and microwave links that could bypass damaged ground lines in another earthquake. Also in the running is IBM, which expanded its own Business Recovery Services Division in late 1989 to compete head-on with CDRS and Sungard. All three disaster planning services offer California "business recovery" sites that can house a client's operations staff during a recovery period.

Through network interfaces, IS staffers are able to launch applications that are actually running on remote mainframes scattered from coast to coast. The industry trend is toward local business recovery centers, which would keep staffers closer to home during emergency periods. During the 1989 quake, however, staffers found themselves scrambling for petty cash before jetting to faraway backup centers (see story below left).

Of all factors, the human component of disaster recovery remains the most difficult to calibrate, IS managers said (see story below right). In the minutes after a quake, psychological trauma, coupled with concerns about immediate family, are of greatest concern.

Senior Correspondents James Daly and J.A. Savage and Correspondent Jim Nash contributed to this report.

An idea comes of age

James Albert had a vision of computing after the earthquake, and it didn't particularly look like mainframes.

Albert, MIS manager at the San Francisco's Bureau of Building Inspections, installed five personal computers at a public school in the city's hard-hit Marina district in the hours following the 1989 quake.

The city's more than 100 inspectors used the PCs to track information on crumbling buildings, including which of the structures were marked for demolition with bright red tags.

Housed in a trailer, those PCs were linked together into a local-area network, using donated Sun Microsystems, Inc. TOPS network cards. "We were jury-rigging an environment that had multiple copies of Ashton-Tate's Dbase III," Albert said.

The bureau's small system proved so effective — and so mobile — that it served as a prototype for a larger system of networked PCs now being installed at bureau headquarters near San Francisco City Hall. By year's end, Albert hopes to have more than 100 Intel 80386-based PCs installed on that Novell, Inc. LAN, along with an aging Four-Phase minicomputer that contains historical data.

Andy Freeberg

James Albert *turned to PCs for help after the quake*

Notes from graduates of Hard Knock U.

The earthquake of '89 taught IS practitioners here a few lessons about surviving a natural disaster that no one teaches in the university — unless it's the College of Hard Knocks.

The lessons, which could just as well apply to another type of natural disaster, or to a power failure like the one caused by this summer's Wall Street fire, include the following:

- Always keep a supply of petty cash on hand. Bechtel Corp. employees, about to fly to Sungard Data Systems, Inc.'s recovery center in Philadelphia, couldn't find very much of it after the quake. "I had about $20 on me," said one Bechtel employee, "and all area ATMs were out of order. I was able to collect about $300 from co-workers, and that proved to be sufficient until we arrived in Philadelphia."

- Have a supply of food, water and cots on hand — you might not be able to get home. A first-aid kit and a supply of portable personal computers might also help. San Francisco commuter trains stopped for a time, and the Bay Bridge became impassable after a 50- by 70-ft upper section fell onto the lower span. "We now have extra cellular phones and computers for our command center, along with cots and food," noted Jane Paradise, manager of corporate information security at Apple Computer, Inc.
- Have a list of home numbers for key personnel, including vendor contacts. Some San Francisco data centers could not get their hands on all their backup data tapes during the first hours after the earthquake. In many cases, the original tapes were placed out of reach by city officials who blocked entry to damaged buildings. One Oakland software firm had to carry data tapes by hand out of the 11th-story window of its building, in which the central staircase separated from the stairwell walls. The person who carried the tapes was rescued by fire truck.
- Get an emergency generator or an uninterruptible power supply if you do not already have one. Many data centers, including the Pacific Stock Exchange, Matson Navigation and Hills Brothers Coffee Co. in San Francisco, were intact but without power for several days.
- Know how to reconfigure your national data net.rork. Apple's primary data center in Cupertino, Calif., kept running after the quake. But the disaster showed how vulnerable it was to disruption from quakes. Following 1989's Hurricane Hugo, Cupertino backed up Apple's Charlotte, N.C., distribution center. Apple has revamped its disaster plans, contracting with all three major hot-site vendors for backup.

Some badly shaken

SANTA CRUZ, Calif. — Doug Michels could not stand up during the Oct. 17, 1989, earthquake. "I'm a native Californian, so I didn't worry about it for the first 10 seconds or so," recalled Michels, executive vice-president of software firm The Santa Cruz Operation last week. "But then, like everybody else at my afternoon meeting, I dove under the conference table. I couldn't do anything else."

Michels was fortunate. Although SCO's three-story headquarters building was within a few miles of the earthquake's epicenter in the Santa Cruz mountains, the building remained intact, and no one was seriously hurt. "Some of the welds in our earthquake bracing cracked, but at least the bracing worked."

SCO's Michels *dove for cover*

"We didn't realize how bad it was until it was over," the 36-year-old Michels said, describing a postquake scene of fallen ceiling panels, keeled-over filing cabinets and drizzling ceiling sprinklers.

Not all the damage was physical, however. "You come to grips with your own mortality after an event like that," Michels said. In the week following the quake, SCO brought three psychologists on-site to help individuals and groups of workers as well as their spouses cope with the emotional trauma.

NEWS SHORTS

Ingres deal progresses

Ask Computer Systems, Inc. last week extended by one week its tender offer of $9.25 per share for shares of Ingres Corp. common stock, setting a new deadline of Friday, Oct. 19. Ask had announced last month that it plans to acquire relational database management system vender Ingres for about $110 million with the backing of Hewlett-Packard Co. and Electronic Data Systems Corp. In a related development, a Delaware judge rejected a major stockholder's bid to block the deal.

Productivity pack for Windows

Microsoft Corp. moved to smooth the bumps users may encounter on the road to Windows 3.0 with the introduction of the Microsoft Productivity Pack for Windows, a collection of programs that work as a computer-based reference program. The pack offers three applications — Learning Windows, Working Smarter and Quick Troubleshooter — that give answers, exercises and technical advice for the graphical user interface. Suggested retail price is $59.95.

German school buys Alliant super

Alliant Computer Systems Corp. announced recently that it had sold the first U.S.-made supercomputer to an eastern Germany customer, Humbolt University. The oldest university in Berlin, where Albert Einstein developed his theory of relativity during 1914-16, will use the Alliant FX/Series supercomputer for scientific applications.

EMC to offer 4M-bit cache boards

EMC Corp. plans to announce cache memory upgrades this week for IBM's top-of-the-line disk controller at prices 25% below IBM's. The IBM 3990 Model 3 cache upgrades, which EMC said will be available immediately, use 4M-bit technology, whereas IBM's upgrade boards use 1M-bit chips. This provides no space advantage or capacity advantage, however, because the actual upgrade cards will be the same size as IBM's. However, a 64M-byte to 128M-byte upgrade from EMC will cost $115,200. The same upgrade from IBM costs $153,600.

Settlement in suit against IBM

IBM reached an out-of-court settlement in a suit filed by XL/Datacomp, Inc., a major distributor of IBM's Application System/400 series machines. The suit was filed when XL and IBM could not agree on how to end XL's role as an authorized industry remarketer for IBM. Under the terms of the agreement, IBM will provide software support at no charge or at limited charges to customers who purchased IBM systems from XL. IBM will also pay an undisclosed amount to XL to resolve disputed bonus claims.

DG wins back federal award

Data General Corp. received good news last week in the form of a $127 million Department of the Interior contract reinstatement. In December 1989, DG had been contracted to provide a nationwide computer network of Aviion systems to the Water Resources Division of the U.S. Geological Survey, when the contract was protested by another bidder. The Court of Appeals for the Federal Circuit in Washington, D.C., ruled in DG's favor and reinstated the contract, which includes more than 6,000 DG Aviion workstations and servers to be installed during the next four years.

Chemical maker outsources

Andersen Consulting racked up its first Canadian outsourcing contract last week, a $5 million deal to take over the entire information systems operation of Marsulex, Inc., a manufacturer of sulfuric chemicals. Marsulex was created by a 1989 leveraged buyout of the chemicals business of another firm, and the new owners decided to transfer IS from the former parent to Andersen. Marsulex, a $160 million company, is the first customer at Andersen's new $23 million data center in Toronto.

Software AG branches out

BY JOHANNA AMBROSIO
CW STAFF

RESTON, Va. — Software AG of North America, Inc. last week made public its far-reaching plans for providing software to help users write distributed and cooperative applications. This represents a major strategic change from the company's primarily mainframe-oriented approach of the past, analysts said.

The goal of the new scheme, called Entire, is to help users move from host-based computing to transparently accessing and manipulating information across multiple and heterogeneous platforms. "Entire will build a bridge between the old and new worlds of computing," said Peter Page, Software AG's executive vice-president.

The first piece of the puzzle to be made available will be the Entire Function Server Technology series. This will allow users to evolve existing applications into functions that sit on servers accessible by personal computers. This way, users can isolate specific applications and share them.

Applications that reside on servers can be written with Software AG's Natural fourth-generation language or Cobol. Software AG officials said the scheme will work with IBM's Repository Manager and will fit within IBM's Syatems Application Architecture. Also, Software AG is providing some new PC applications of its own, including text management, office automation and a geographic information system that combines geographical and textual data within one physical database.

Entire will support OS/2 and Unix, as well as VM, MVS and Digital Equipment Corp.'s VMS operating system. Servers will be able to access DB2, Software AG's own Adabas database management system and any other database that understands IBM's SQL. After years of downplaying SQL's importance in the industry, Software AG is finally implementing it in Adabas.

Also, Entire will provide for any-to-any connectivity among the supported clients and servers. Software AG will make a services layer available to take requests from, for example, an OS/2 application and convert it into something that an MVS application can understand. This layer will handle multiple communications protocols, including Systems Network Architecture, Advanced Program-to-Program Communications, Decnet, LU6.2, Netbios and others.

Page said this will allow for "Lego programming" — to hide the communications concerns from both end users and programmers.

Some of the software to allow all this to occur will be available by December; some of it will take 12 to 18 months to roll out, the company said.

Excitement stirred

Observers seem impressed with the plan. "It's an exciting announcement," said John Logan, vice-president of the Aberdeen Group in Boston. "MIS managers' No. 1 concern is using the microcomputers they've bought to distribute the processing."

Of note, analysts said, is that Software AG will allow other applications to be brought in besides those developed with the company's traditional tools.

However, observers said, there was one part of the plan that users should be wary of. "This architecture and set of tools is based on a set of protocols Software AG will develop. So it's not really 'open,' because users are still buying into something that's dependent on a vendor," said Adam Rin, vice-president of Gartner Group, Inc. in Stamford, Conn. "But Software AG is a stable, long-term player, and that alleviates the concern."

Colby Springer, vice-president of information services at Pearle, Inc. in Dallas, said he is most looking forward to the ability to run the same software across different hardware platforms. Pearle, the parent company for stores that sell eyeglasses across the country, has an IBM mainframe and Unix-based point-of-sale systems. "It will be great to be able to cross multiple platforms and not have to reinvest in different tools," he said.

Still, most industry watchers said there is a good chance that the company, long well-regarded for its technological strengths, will be able to pull all this off. "I haven't a doubt that they will be able to do it," said Paul Hessinger, chief technology officer at Computer Task Group, Inc. in Buffalo, N.Y.

Some also noted that this strategy also represents survival for the country's six largest software vendors.

"They're getting into a more robust, growth-oriented segment of the database market," said Stuart Woodring, director of software strategy research at Forrester Research, Inc. in Cambridge, Mass. "They're giving both their customers and themselves a growth path from the old-world DBMS into a new-world DBMS. Now we'll see if they can deliver."

X terminal marks the spot for Wyse system

BY MARYFRAN JOHNSON
CW STAFF

SAN JOSE, Calif. — Wyse Technology jumped into the X terminal market last week and also introduced a Unix-based multiuser midrange system.

Wyse unveiled the Series 7000I Model 740, the first in a series of systems based on the Intel Corp. I486 chip.

"Wyse's hope is to become a player in the small to medium-size computer market in the same fashion as it has in the terminal market," said Paul Cubbage, an analyst at Dataquest, Inc. Wyse now holds about half the U.S. market for general-purpose terminals.

The new WY-X5 networking terminal is based on a 32-bit Motorola, Inc. 68020 microprocessor and is priced at $1,799. Designed for the X Window System operating under Unix environments, the terminal will be available in the first quarter of 1991.

Company officials acknowledged that the worldwide market for X terminals is still relatively small, with less than 70,000 units expected to be sold in 1990. Yet Wyse is banking on that market blossoming to 486,000 annually by 1994, based on projections from International Data Corp. in Framingham, Mass.

The Series 7000I will be marketed as a "bridge platform" between Wyse's low-end 5000 series and high-end 9000 series, aimed at users who want the multiuser power of Unix along with access to DOS- and OS/2-based environments, company officials said.

The Model 740 is scheduled to begin shipping in December at prices ranging from $17,500 to $31,450. Initially, the machine will support one 33-MHz processor and run at 27 million instructions per second (MIPS). Eventually, Wyse said, it will be scalable to three processors, a mix of 33-MHz and 50-MHz chips.

"Wyse is pioneering the technology of pushing the I486 [processor] into the midrange market," said Rikki Kirzner, a senior analyst at Dataquest. "This is giving a midlife kicker to their existing product line, and it allows them to capitalize on what they knew best without scrapping the old product line."

AMD wins round in 386 dispute

BY MAURA J. HARRINGTON
CW STAFF

SANTA CLARA, Calif. — Intel Corp. "double-crossed" a competing semiconductor firm by not transferring sales and manufacturing rights for its 80386 chip, an arbitrator declared last week. Whether that judgment will allow Advanced Micro Devices, Inc. (AMD) future rights to the 80386 remains unclear.

Retired California Superior District Judge J. Barton Phelps released his decision last week in a 3-year-old dispute over whether Intel subverted a pledge to provide 80386 manufacturing rights to AMD. Such agreements, known as second-sourcing, were formerly a common practice among chip makers to allay concerns among customers about product availability.

Intel's decision to retain sole manufacturing rights to the 80386, which has become the standard for high-performance personal computers, has allowed the firm to maintain a lock on the market and keep prices high.

Last week, Intel reported that third-quarter revenue exceeded $1 billion for the first time in its history, chalking up a profit of $172 million. AMD reported a loss of $17.8 million on revenue of $25.4 million.

Regarding AMD's licensing rights to Intel's IAPX product family under a 1982 agreement, Phelps pulled no punches in affirming that AMD had been wronged. "AMD has been double-crossed by Intel when Intel, having achieved its aims of establishing the IAPX family in the marketplace, abandoned AMD by refusing to transfer to AMD the 80386," he said.

Still questions

Whether AMD can acquire rights to manufacture the 386, however, was left unanswered until a future step in the arbitration process. The 386 is not, Phelps ruled, specifically cited in the agreement between AMD and Intel as a product that would be exchanged. But whether the losses suffered by AMD as a result of Intel's actions are sufficient to warrant such a transfer will be decided later, said Phelps, who also said Intel was within its rights in declining to accept certain AMD products in exchange for Intel technology.

"Intel is pleased that today's decision does not require the transfer of the 386 microprocessor," company General Counsel and Vice-President F. Thomas Dunlap Jr. said in a prepared statement Thursday after the ruling was issued.

AMD, however, said it will ask Phelps to assess $500 million in monetary damages and rights to the 80386 chip during the next phase of the arbitration proceeding, according to Chairman and Chief Executive Officer W. J. Sanders III.

The case "is certainly not going to put either company out of business," said G. Gervaise Davis III, a partner at the Monterey, Calif.-based law firm of Schroeder, Davis & Orliss who has specialized in computer law for more than 20 years and has been following the AMD/Intel dispute. The real issue to consider is not whether AMD will win full rights to the 386 but whether it is legal for the company to copy the technology under the AMD/Intel agreement, he said.

AMD said last week that it has already reverse-engineered its own version of Intel's 386 chip.

However, earlier in the week, U.S. District Judge William Ingram issued a temporary restraining order prohibiting AMD from using the numbers "80386" or "386" in the name of any new product. The order is in effect until a court hearing today.

Intel filed for the order recently after it discovered that AMD was planning on calling a future product the "AM386." Intel said it learned of the upcoming announcement after an Intel employee named Mike Wedd stayed at the same hotel as an AMD employee with the same name. The AMD documents containing news of the upcoming chip were then mistakenly forwarded to the Intel employee.

Diskless PS/2 finally surfaces for LAN use

BY RICHARD PASTORE
CW STAFF

IBM last week dribbled out the first of several anticipated Personal System/2 announcements for the fall season. The least exciting came first in the debut of the PS/2 Model 55 LS, a diskless workstation intended primarily for use as a local-area network node.

The diskless machines are based on the 16-MHz Intel Corp. 80386SX chip and come equipped with 2M bytes of memory, the Micro Channel bus and a remote software-loading utility. They support either IBM Token-Ring LAN installations or Ethernet networks with adapter cards included.

Diskless personal computers have been around for a while, appealing to a subset of users who require data security and begrudge paying extra for magnetic media they do not need on a LAN station. Indeed, according to several observers, IBM had been configuring its Model 55SX without disk drives on special request for the past year.

The IBM entries do not have the value-added security features that distinguished Compaq Computer Corp.'s diskless PCs unveiled last spring [CW, May 21], said Frank Michnoff, an analyst at Meta Group, Inc. in Westport, Conn.

"IBM didn't do anything to distinguish this diskless model from the 55SX with any additional features," he said. "It's another example of IBM being a follower and not a leader."

The Token-Ring model is available now for $3,490 — $5 less than the list price of the Model 55SX with a 30M-byte hard disk. The Ethernet version costs $2,950 and reportedly will ship next month.

IBM also announced an Ethernet PS/2 Adapter/A, which is included with the 55LS but is an option for other PS/2s. The $575 board is set to ship next month.

In addition, the company unveiled a wide-carriage ink-jet printer called the Execjet Printer. Optimized for quiet operation, the printer is available now for $1,099.

Compaq

FROM PAGE 1

Like its Intel 80286-based predecessor, the LTE 386S will set an early standard for both customers and competitors, observers said. "It will become the standard, because the baseline is the 386SX for the desktop PCs, laptops and probably for notebook PCs," said Stephen Rood, microcomputer technology manager at Coopers & Lybrand in New York.

James Rubin

Compaq's Red Canion *displays company's new 80386SX-based laptop*

Rood had passed up the LTE 286 in favor of high-end Toshiba Corp. portables because of the difference in screen resolution and power, but the LTE 386S will receive "serious" consideration for future purchases, he said, especially when weight is a key factor. The LTE's poundage is less than half that of the 386-based Toshiba 5200.

At fellow New York accounting giant Deloitte Touche, the old LTE could not handle the firm's field applications — more than 30M bytes worth of software. The new LTE high-end model, with a 60M-byte hard disk, is the first notebook PC worth his consideration, said MIS manager Claude Rankin.

Although there is still a market for the less powerful LTEs, which will not be discontinued, the new model "is a great piece of equipment and will be a good seller," said Andy Seybold, a portable computer analyst at Dataquest, Inc. in San Jose, Calif. However, Compaq's market lead will be "very temporary" in light of coming competition, he said.

"We now have a target for everybody in the world to shoot at," Seybold said. "There's going to be a commodity laptop, and it'll be the 386SX notebook with VGA, a couple of megs and a hard drive and floppy."

Seybold said he knows of three rivals coming within the next month, one of which, he said, will best the LTE's display and weight at about the same price.

Epson America, Inc. has already announced a 386SX-based notebook to be delivered late in the year. Compaq is not worried, however, according to marketing manager Lorie Strong. "We're fairly confident that from a performance and functionality standpoint, we'll have a fairly nice lead," she said.

> THE LTE 386S "will become the standard, because the baseline is the 386SX for the desktop PCs, laptops and probably for notebook PCs."
>
> STEPHEN ROOD
> COOPERS & LYBRAND

Nevertheless, the competition will soon escalate into a price war, observers agreed. "I think we'll see price wars in this category," Rood said. He and other users said they would hold off any purchases to see how the prices shake out.

Competition and the economies afforded by the coming Intel 386SL integrated chip set will drive notebook prices down into the $4,000 to $5,000 range, predicted Richard Horan, editor-in-chief of "Portable Technology Update" in New York.

Distinguishing one 386SX notebook from the next will be increasingly difficult, even for Compaq, observers predicted. "How do you build a commodity product and distinguish it from everybody else?" Seybold said.

Compaq will try to differentiate this unit with a $1,499 custom desktop expansion package. The expansion system, exclusive to the LTE 386S, includes a color VGA monitor, full-size keyboard, two standard expansion slots and mass storage options.

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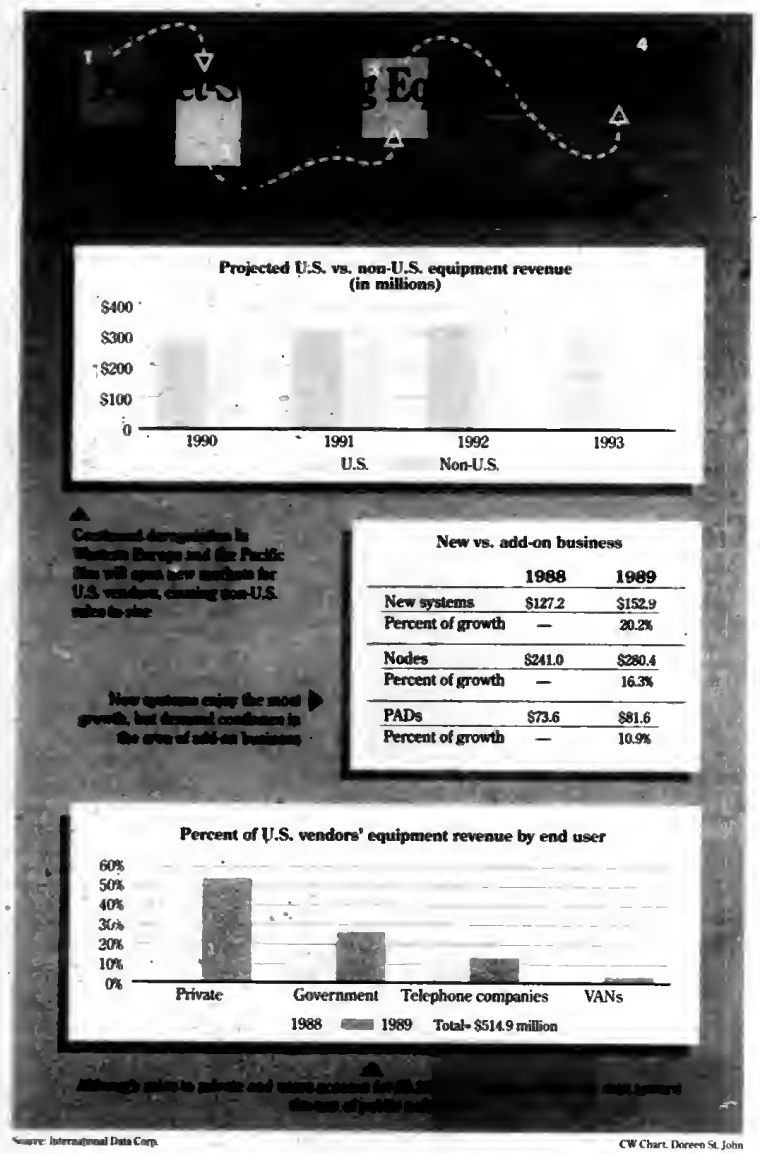

New vs. add-on business

	1988	1989
New systems	$127.2	$152.9
Percent of growth	—	20.2%
Nodes	$241.0	$280.4
Percent of growth	—	16.3%
PADs	$73.6	$81.6
Percent of growth	—	10.9%

Source: International Data Corp.

CW Chart, Doreen St. John

NEXT WEEK

IS management is a different game at The Body Shop, the fast-growing personal care products retail chain. Systems manager **Rick Hellar**'s job is to recognize where technology is a complement to the company's unconventional business philosophy and where it is a conflict. Read more about Hellar's responsibilities in Manager's Journal.

Joyce Ravid

DOS loyalists and OS/2 hopefuls are running out of reasons to stay true as the new guy on the desktop — Unix — gains favor with vendors and customers alike. If you're curious about what Lotus, Wordperfect and Ashton-Tate have in mind for the future of their popular business productivity products, turn to Product Spotlight.

INSIDE LINES

Mark of confidence, or warning?

Last year on Oct. 17, the ground shook in California. This year, the date will be marked by the release of Ashton-Tate's financial results for the quarter just ended. Whether the news will send shareholders diving for cover remains to be seen.

What recession?

Agenda '91, the annual gathering of industry giants and those who think they are, featured a fun auction to benefit the nonprofit Foundation of Educational Software, which provides grants to fund software for elementary school teachers. For $2,500, Borland Chief Executive Officer Philippe Kahn bought a cruise on the sailboat of Lotus software guru Frank King. Kahn's contribution, a half-day of code review, went for $8,000 to rival Bill Gates of Microsoft, who also paid $6,000 to purchase former Apple Chief Scientist Jean-Louis Gassee's diamond earring. Gates donated his 20 favorite videos, which were purchased by Dave Liddell of Metaphor for $6,000. Mitch Kapor's 1940s silk Aloha shirt went to Gordon Eubanks for $1,000. In keeping with the conservative fiscal mood at Lotus these days, Lotus head honcho Jim Manzi kept his hands in his pockets and bought nothing.

Promises, promises . . .

IBM has still not delivered a Repository Manager customer document designed to explain the software's key information model. In August, the company said it would deliver it "within a few weeks." As of last week, IBM is now shooting for sometime next month. The document is IBM's attempt to address complaints about the lack of openness to Repository Manager. Currently, the only way to get details on the information model is to license Repository Manager, which costs about $4,500 per month.

. . . reality

The pricing structure for Netview Version 2, announced last month, is apparently so convoluted that even IBM's own salespeople are having trouble getting it straight. As one user tells it, his IBM sales reps were not only unable to tell him how the new pricing would affect his firm but could not even say which of the new Netview categories — distributed, centralized or stand-alone — his firm's Netview systems fell under. "They said they'd get back to me," he said. "Fortunately, we have six weeks before we have to figure out our 1991 MIS budget."

AT&T sales reps, please phone home

Don't look now, but even as AT&T swears it does not have a laptop computer in the works, with or without a radio frequency modem, corporate IS managers report meeting with AT&T representatives to discuss the new machine. The official word is that talks with Marubeni, the large Japanese trading company, are no more conclusive than they were a month ago and have not reached the stage of specific product development. Yet reports from Japan indicate that Marubeni has confirmed the laptop angle of its talks with AT&T. Of course, it is possible that no one has told AT&T's Computer Systems Division about the new product.

When less is more

This time last year, the tales of woe concerning Wang Laboratories' staggering debt load could have filled a book. As of this month, the book would have to be called *Less Than Zero*. Under a game plan fashioned and executed by CEO Richard Miller and Chief Financial Officer Michael Mee, the company quietly extinguished the last of its bank debt two weeks ago.

Oh! somewhere in this high-tech land venture gold will us bless;
The banks build assets somewhere, and somewhere gas costs less;
And somewhere Dukes can manage, somewhere presidents shout;
But there is no joy in Beantown — mighty Clemens has bleeped out.

If you've got more on your mind than the ploys of summer, hit a liner to News Editor Pete Bartolik at 800-343-6474, loop a message to COMPUTERWORLD via MCI Mail or knock one out of the fax at 508-875-8931.

Don't look now, but there's something moving on your desk.

IBM Personal System/2®s with Micro Channel™ on desks everywhere are starting to exhibit some pretty wild and wonderful tendencies. They're creating incredible on-screen presentations. Interactive tutorials with full-motion video and stereo sound. Graphics, text and animation in harmonious coexistence. What makes it all possible is the multimedia capability of the IBM PS/2® with Micro Channel.

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The PS/2 itself is designed to put multimedia applications to their best use. Micro Channel has always given the PS/2 extremely fast data rates and better multitasking capabilities. But in multimedia it really gets a chance to shine. The multilane highway design of Micro Channel Architecture is perfect for processing complex multimedia applications. Most conventional PCs just don't have the power or the data paths to do it at all. Plus, Micro Channel in the PS/2 lets you use the new IBM CD-ROM that gives you the storage equivalent of over 400 diskettes on a single CD so you can have access to all kinds of data-intensive material like clip art and digital stereo sound.

Do It All. All At Once.

With a PS/2 with Micro Channel, you can start using some hot products right now. One is IBM's Audio Visual Connection™. It's both a software and a hardware tool that allows your PS/2 to import high-quality audio, dazzling still images, even special effects, as well as text, graphics and other data. Then, you can edit and present it in any combination you like right on your PS/2 screen, share it with a network or project it on a wall. It's impressive, but don't take our word for it—IBM's Audio Visual Connection received *PC Magazine*'s Technical Excellence Award for 1989.

Another exciting multimedia product is the IBM M-Motion Video Adapter/A™. Coupled with the power of Micro Channel, it lets you incorporate full-motion video and high-quality sound from sources like video disks, VCRs and video cameras, digitize them, and display them in an endless array of formats. And for software developers, there are ActionMedia™ cards, which use the latest DVI™ Technology, allowing full-motion video and analog sound to be compressed, digitized, stored on a hard or optical disk and played back in real time.

You've Already Got The Best Seat In The House.

Best of all, you can do it all today with the Micro Channel PS/2s you've already got. No special monitors to buy. And you'll be perfectly poised for tomorrow's most exciting multimedia technology, like interactive touch displays and much more. Contact your IBM Authorized Dealer or IBM marketing representative. Call 1 800 255-0426, ext. 10, for a free videocassette or a dealer near you. Your desk will never be the same.

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